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ABSTRACT

From a 9,000-word lexicon, a set of spelling-to-sound correspondences was developed to systematically organize possible content for beginning reading instruction. With the aid of computer sorting procedures, correspondences and correspondence exemplars were sequenced according to criteria of productivity, regularity, generalizability, and phonological equivalence. This report describes sequencing criteria and methodology, and the specific sequence; in addition, all words are listed (including irregularly-spelled words, proper names, contractions, and abbreviations), sequenced by and within correspondences. (Author)

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DESIGN FOR SEQUENCING SPELLING-TO-SOUND CORRESPONDENCES FOR THE SWRL READING PROGRAM

Betty Berdiansky, George Stanton, and Bruce Cronnell

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From a 9,000-word lexicon, a set of spelling-to-sound correspondences was developed to systematically organize possible content for beginning reading instruction. With the aid of computer sorting procedures, correspondences and correspondence exemplars were sequenced according to criteria of productivity, regularity, generalizability, and phonological equivalence. This report describes sequencing criteria and methodology, and the specific sequence; in addition, all words are listed (including irregularly-spelled words, proper names, contractions, and abbreviations), sequenced by and within correspondences.

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DESIGN FOR SEQUENCING SPELLING-TO-SOUND CORRESPONDENCES FOR THE SWRL READING PROGRAM

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INTRODUCTION

The Reading Program of SWRL Educational Research and Development is founded on the use of spelling-to-sound correspondences. Correspondence rules are used to teach the skill of decoding printed words because spelling-sound patterns of English are generally regular and specifiable by means of a manageable number of rules (Venezky, 1967, 1970). Since the regularities of English spelling-to-sound patterns far outnumber the irregularities, a rule-based approach will provide transferable elements for decoding new words, and the few irregularities can be learned as sight words. For a detailed discussion of the merits of such an approach, and the use of spelling-to-sound correspondences in such a reading program, see Desberg and Berdiansky (1968) and Berdiansky, Cronnell, and Koehler (1969).

IDENTIFICATION OF THE LEXICON

The first step in the design of this reading program was the specification of a lexicon appropriate for children at the kindergarten through third-grade level. Twenty-nine different sources were consulted in this regard, including the Rinsland (1945) list for elementary school children, preprimer to fourth-grade reading materials, published word lists, children's responses to word association tasks, children's TV programs, and children's verbal behavior in song and in play. Approximately 9,000 words were selected which were believed to be in the recognition, if not active, vocabulary of K-3 children. This provided an adequate base for studying the spelling-to-sound correspondences needed in beginning reading, as well as an ample supply of words for actual use in the reading program. All words not already categorized by the Rinsland list were screened by SWRL staff, and categorized as appropriate to either the K-1 or 2-3 grade levels.

DEVELOPMENT OF SPELLING-TO-SOUND CORRESPONDENCE RULES

After specification of the lexicon, the spelling-to-sound correspondence rules were developed--based primarily on the work of Venezky

(1967, 1970).[1] Venezky's rules were modified somewhat to enable the reader to proceed directly from spelling to sound. Moreover, the study of spelling-to-sound correspondences was limited to the 6,000 one- and two-syllable words in the SWRL lexicon, since these were believed to be easier and more useful than polysyllabic words for beginning readers.

Although there are only 26 letters in the alphabet, a total of 69 grapheme units were identified for the lexicon. This larger number is due to the fact that grapheme units were considered to be not only single consonants and vowels (e.g., m, e) but also sequences of letters which act as a unit:

1. double consonants, e.g., mm, tt;

2. consonant digraphs, i.e., two consonant letters whose pronunciation cannot be determined from the correspondences for the individual letters, e.g., ch, th;

3. strings of letters which commonly function together as units, e.g., ck, le;

4. secondary vowels, i.e., two or more vowel letters with a single corresponding pronunciation, e.g., au, ea.

A total of 166 correspondences were established for the one- and two-syllable words in the lexicon. (A list of all correspondences, with examples, is found in Appendix D. See Berdiansky et al. (1969) and Cronnell (1971a), for a complete description of the correspondences used in this project.) However, for nearly two-thirds (42) of the 69 grapheme units, one correspondence rule was sufficient; for 15 of the grapheme units, only two rules were needed; for the remainder, 7 required from three to five rules. It was the primary vowels (a, e, i, o, u, y), with 11 to 16 correspondence rules each, that appreciably raised the total number of rules established for the lexicon. This latter result is not very surprising considering the well-known variability of English vowel spellings.

The large number of correspondences may imply an unwarranted degree of complexity. The following four points should clarify this issue.

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[1] See Berdiansky, Cronnell, and Koehler (1969) for greater detail regarding the development of the correspondence rules, as well as the lexicon specification.

1. Many correspondences are generalizable across several grapheme units (e.g., correspondences for final VCe[2]). This is particularly true for primary vowels where there are 10 such cases; i.e., there are 50 individual letter correspondence rules which can be reduced to 10 general vowel correspondences (referred to as "general primary vowel rules").

2. Correspondences which were general but complex (e.g., o → [o] / __C({r l})V) were broken down into several simpler ones (e.g., Rules 011, 012, 013, 014[3]). This simplification, while reducing complexity, did increase the number of correspondences.

3. Correspondences were established for each double consonant, although, in all instances but two, the pronunciation is the same as for the single consonant.

4. While the environmental conditions differ for each correspondence for a particular grapheme unit, the number of different pronunciations involved is relatively small. After allowing from one to six single-word pronunciation irregularities per grapheme unit, 35 of the grapheme units have just one pronunciation and 17 have just two.

Thus, the larger number of correspondences does not necessarily indicate a proportionately greater amount of learning difficulty.

With the set of correspondences appropriate to the lexicon established, the 6,000 one- and two- syllable words were coded for their component grapheme-unit correspondences. These coded words were then processed by computer and grouped by correspondences, so each word appeared in the list of exemplars of each of its component correspondences. Using the computer-generated data, counts were made of the frequency of individual correspondences. These frequency counts provided information on the usefulness of correspondences and were employed in the sequencing of correspondences.

PRELIMINARY SEQUENCE

In order to use spelling-to-sound correspondences in an instructional program, they must first be sequenced. Therefore, after the compilation of the lexicon and the specification of the spelling-to-sound correspondence rules, the subsequent task in the design of the Reading Program was the formulation of an instructionally efficient and practical rule sequence.

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[2] See Appendix A for a key to pronunciation and symbols.

[3] An explanation of the numbering system devised for the rules of correspondence is given in Berdiansky et al. (1969, p. 15).

Desberg and Cronnell (1969) presented a preliminary sequence based on the following criteria:

1. The spelling-to-sound correspondence rules were to be sequenced primarily according to frequency of occurrence in the SWRL lexicon. High-frequency correspondences are more useful because they provide more word exemplars and greater opportunity for transfer.

2. The sequence of reading instruction was to begin with simple regular rules. Complex rules and rules with pronunciation variations were to be introduced later. More specifically:

   a. correspondences for single letters would precede correspondences for grapheme units of two or more letters;

   b. grapheme units with only one correspondence would precede those with two or more;

   c. correspondences with no environmental constraints would precede those with environmental constraints;

   d. double consonant rules (e.g., MM10) would be sequenced with their corresponding single consonant rules (e.g., M10).

3. Rules were placed earlier in the sequence if they occurred in words which individually had high speech frequencies. Thus, when combined with rules having high, total lexicon frequencies, a small number of rules would be able to generate a large number of frequently used words.

4. The rules were to be sequenced so that, from the beginning of the program, syntax approximating that of normal speech would be possible by using primarily those words containing rules already taught. The number of sight words necessary for this natural syntax was to be minimal.

However, in the Desberg and Cronnell (1969) report, primary vowels, secondary vowels, and consonants were sequenced separately. For a reading program, vowels and consonants must be used together to produce words. Thus a new sequence was necessary, which would combine all types of grapheme units. The work described in the present report resulted in such a sequence, based on the above criteria.

PROGRAM IMPLICATIONS AND ADVANTAGES

A beginning reading program employing such a sequence of rules and words has several major implications and advantages:

1. A well-organized set of spelling-to-sound correspondences

enables the reader to identify many words which are in his oral vocabulary, but which he has not encountered before in print.

2. The rules, defined on a properly delimited set of lexicon items, are sequenced in a manner that capitalizes on their applicability to the vocabulary of the typical reader.

3. Emphasis is placed on the regularity of the English letter-sound correspondence system and the high degree of pronunciation predictability. Instruction also specifically points out those words containing a correspondence which is not predictable.

4. The most productive and most useful rules are introduced early. Thus, many words are initially available upon presentation of few rules.

5. Instruction is simplified by focusing on individual correspondence rules. Extensive practice is made available for each new rule by means of words containing that rule as their only novel component.

6. Systematic simple-to-complex instruction follows from the sequence.

7. The large number of words permits construction of equivalent, but not identical, word usage in practice materials, reading text, word-attack exercises, and criterion-attainment checks.

8. Grouping words according to common correspondence components provides numerous examples for instruction focusing on a rule, whether or not that rule is made explicit to the reader.

The rule sequence described in this report is the product of numerous and extensive critical analyses and revisions, and forms the basis for selection of content for the SWRL Reading Program.

Section I

GENERAL SEQUENCING CRITERIA AND METHODOLOGY

GENERAL SEQUENCING CRITERIA

Two general criteria were employed to determine the rule sequence: productivity and complexity. The relatively more productive and less complex rules were sequenced first. Productivity was determined by (1) number of words in the lexicon containing that rule, and (2) usage frequency of the words in the lexicon containing that rule. Complexity was less concisely definable, but principal determiners of relative rule complexity were:

1. Grapheme-unit pronunciation variability. The more pronunciations associated with a grapheme unit, the more complex are any of its correspondence rules.

2. Environment complexity. The more letter-specific the environment must be to determine the pronunciation, the more complex the rule.

3. Environment similarity. A rule is relatively complex if it involves the same environment as another rule specifying a different pronunciation for the same grapheme unit.

4. Environment generalizability across grapheme units. If a rule involves the same environment used in a different rule then, sequenced together, the rules are considered less complex than if they each had unique environments.

5. Phonological generalizability. Correspondences involving the same pronunciation are sequenced together to reduce complexity.

6. Similarity of exemplars to those already introduced. Rules may be sequenced if their exemplars have the same number of syllables or the same stress pattern as words previously introduced.

RATIONALE FOR UNIT, BLOCK, AND YEAR DIVISIONS

To enhance its use for developing an instructional program, the initial rule sequence was divided into groups called "blocks," and then into "units" within blocks.[1] The blocks and units were sequenced, as were the correspondences within them. This division reflected the grouping of rules according to specific similarities so that instruction

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[1]The terms "block" and "unit," as used in this report, do not correspond in way of content to the same terms as used in the Reading Program.

could conveniently focus on limited shared characteristics of the rule exemplars at any point in the sequence. Such a focus was expected to promote the learning of rule generalizations which could be applied to transfer (i.e., previously unencountered) words.

Some of the criteria for grouping correspondences into units and blocks were:

1. type of grapheme unit (e.g., primary vowels vs. secondary vowels);

2. generalizability across correspondences (e.g., the vowel classifications VCe, VCC, Vr);

3. rule frequency;

4. single letters vs. digraphs;

5. phonological similarity or identity (e.g., the [ð] and [θ] correspondences for th; the [oi] correspondence for oi and oy);

6. environmental similarity (e.g., correspondences for a and o before l).

In addition, provisions were made in the sequence for introducing words of two, three, or four syllables at successive points. The general steps involved in sequencing words of more than one syllable were (with two-syllable words as examples):

1. compounds (e.g., bedtime),

2. affixed forms (e.g., bigger),

3. words arranged by stress pattern (e.g., first syllable stressed: rabbit; second syllable stressed: until).

The 27 blocks varied greatly in the number of new rules introduced in each. The number ranged from zero, in blocks concerned with affixes or the review of previously introduced rules for polysyllabic words and higher grade-level words, to a high of 24 rules in Block 1.

The 27 blocks were grouped for convenience into four instructional year divisions.[2] The divisions were based on manageable learning loads for the corresponding K-3 levels, rather than on an equally divided number of blocks or rules per year. (First Year: 4 blocks, 44 rules; Second Year: 10 blocks, 48 rules plus suffixes and VCCe exemplars; Third Year: 8 blocks, 35 rules, plus affixes, 2-3 grade level words, and three-syllable words; Fourth Year: 5 blocks, 57 rules, plus affixes and four-syllable words.) The resulting sequence of rule categories, by year, was:

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[2]A "year" in this report corresponds approximately to two Blocks in the Reading Program.

1. First Year involves short vowels, single consonants, double consonants, and consonant digraphs. All of the exemplars are one-syllable, one-vowel words, classified as appropriate at the K-1 grade level. At least one pronunciation, the most frequent in the SWRL lexicon, is introduced for all letters of the alphabet (except q). The consonant digraphs are common ones contained in high-frequency words. The short-vowel rules are introduced before the long-vowel rules because the short vowels are more frequent, and have simpler environments. The consonant, digraph, and other vowel rules specified for First-Year instruction are generally of high frequency and low complexity.

2. Second Year introduces long vowels, other high-frequency primary vowel rules, secondary vowels, and additional consonant digraphs. Two-syllable words, commencing with compounds and inflectional suffixes, enter the sequence, and instruction covers the vowel stress-pattern variation of these two-syllable words. The primary-vowel rules in Second Year, besides the long-vowel VCe rules, are the correspondences for vowels preceding r, short vowels in two-syllable words, and unstressed vowels having an [ə] or [ɪ] pronunciation. In addition, there are six vowel rules which account for high-frequency words and are exceptions to the regular short- and long-vowel rules. The secondary vowels entering the sequence here are of high frequency.

3. In Third Year, 2-3 grade-level words, as well a K-1 grade-level words, are utilized as exemplars for the rules introduced. The sequence includes the following: three-syllable words; medium-frequency primary and secondary vowel rules; low-frequency consonant rules; silent letters; two- and three-syllable words with affixes; major palatalizations; and stress patterns for three-syllable words.

4. The Fourth Year sequence covers the remainder of the rules of correspondence, i.e., primary and secondary vowel rules of low frequency and low utility. In addition, four-syllable words are introduced, including those with affixes and those with new stress patterns.

A summary of the complete rule sequence is found in Appendix C.

COMPUTER PROCESSING OF SEQUENCE, RULES, AND EXEMPLARS

After establishing a sequence for the rules of correspondence, a computer program was written applying the sequence to the entire lexicon of one- and two-syllable words. This program was designed to search the lexicon and to list for each rule the words containing that rule in combination with rules previously introduced. Each word appeared as an exemplar of only one correspondence, all other correspondences in the word having already been introduced. In addition to the main purpose of listing sequenced rule exemplars, the computer program also provided a count of the number of words listed upon the introduction of each rule, the number of words listed for each unit

of rules, and the number of words listed for each block of rules. The word lists and frequency counts are given in Section IV. The program was run separately for the portion of the lexicon designated as K-1 grade-level words and again for the 2-3 grade-level words.

In addition to the computer-processed sequence, the uncoded words of three or more syllables were arranged in the sequence by hand. Upon the addition of these words, several more correspondences were established to account for additional spelling-to-sound relations found in the larger lexicon; this brought the total number of sequenced correspondences from 166 to 186.

Also, a parallel study (Cronnell, 1971b) was made of spelling-to-sound correspondences in nearly 500 common proper names (primarily first names, but with some high-frequency surnames). These names (both regular and exceptions) were arranged according to the sequence and principles described above. Section VI lists these sequenced proper names.

WITHIN-RULE SEQUENCING CRITERIA

Examination of the computer listing of exemplars for each rule in the sequence revealed that certain words were simpler and clearer examples of the rule than were other words in the same list. Consequently, the exemplars of each rule were subgrouped, primarily according to the location of the exemplified grapheme unit in those exemplars. Then an instructional word-group order was established, based on predicted efficiency and clarity of rule exemplification in each word group. The general criteria used for this order were:

1. Position of grapheme unit;
2. Number of syllables;
3. Frequency;
4. Complexity of other correspondences in the examples.

When there was no criterion for division, or when the number of exemplars was low, words were alphabetized. Within each subgroup, words were also alphabetized. Section IV lists the exemplars for each rule, subgrouped according to the within-rule sequencing criteria described above. More specific criteria also utilized are described in Section III.

IRREGULAR WORDS

Approximately 10% of the one- and two-syllable words in the SWRL lexicon are labeled "irregular." These words contain at least one

correspondence which is not accounted for by any of the rules in the program. Such exceptions were grouped and listed separately from the regular words, but according to the same sequence described above for the regularly spelled words. For the purpose of computer sequence processing, the irregularity within each exception word was designated as equivalent to the grapheme unit's earliest appearing regular counterpart. In addition, each word was not introduced until all the regular correspondences within it had appeared in the sequence. Thus, the irregular words were computer sequenced according to their earliest possible occurrence. In general, it was planned that irregular words would enter the exemplar sequence with the rules to which they were similar, or to which they were specific exceptions, provided that all of their regular rule components had already been introduced. To accomplish this, some of the irregular words had to be "hand-moved" in the sequence. The sequence of irregularly spelled words is found in Section V.

It is recognized that many exceptions are high-frequency function words, useful and necessary for reading text syntax, which for naturalness in reading materials must be used earlier than now placed in the sequence. In fact, a reading program could well begin with 15-20 high-frequency and high-utility sight words (primarily irregular), rather than commencing immediately with rule-based words, in order to more closely approximate spoken language in the reading texts. Most irregular words contain only one irregular correspondence. (While 10% of the coded one- and two-syllable words in the lexicon are irregular, their irregular components account for only 3% of the total number of grapheme units found in the lexicon.) This being the case, after rules are introduced, reinforcement can still be given the reader for decoding the major part of an irregular word, thus again emphasizing the high degree of regularity in English spelling-to-sound correspondences.

Some exceptions can be handled by additional correspondences when a larger lexicon is used. Moreover, even when there are exceptions to established correspondences (primarily due to environmental constraints), new or unusual pronunciations for a grapheme unit are rarely involved. In addition, only 55 different base words plus their derived forms (e.g., to, plus into, onto, and unto) account for 21% of the exception words. If beginning readers can learn a group of basic sight words and can have a set for diversity, they should be able to decode most words containing exceptions.

Consideration should also be given to the place of contractions, abbreviations, and bound morphemes in a reading program. Without these, sentences often tend to be awkward and unnatural. The use of common contractions might help prevent beginning readers from reading in a stilted, word-by-word fashion, since such contractions would make the texts more like spoken language. High-frequency abbreviations such as Mr. and Mrs., and others such as Dr., St., Ave., a.m. and p.m. might also be considered for inclusion commencing at least in the second year

of instruction. In Section VIII, contractions and abbreviations are arranged according to the sequence described in this report.

Tenses may change unnaturally within beginning stories if constraints are placed on them by the absence of inflectional suffixes, such as -s, -es, -ing, and -ed. There may be a lack of consistency both within the narration itself and between the narration, dialogue, and illustrations. Investigations should be made to determine whether the additional learning loads involved with contractions and such suffixes as -s, -ing, and -ed are great enough in the first year of instruction to warrant sacrificing natural speech and possibly even hindering comprehension and reading fluency.

GRAPHEME-UNIT PRONUNCIATION VARIABILITY

As discussed above, the SWRL Reading Program incorporates two types of spelling-to-sound rules of correspondence: "regular" rules with predictable pronunciations usually occurring in specifiable environments; and "irregular" rules with correspondences considered too unproductive to be classified as regular rules, or with exceptions to regular rules. An irregular correspondence of this latter type is one with a pronunciation not already covered by a regular rule, or one with a regular pronunciation occurring in an environment different from that specified by the regular rule.

Most consonant and secondary vowel grapheme units have only one or two regular pronunciations. And for all consonants except s and th, and for all secondary vowels except ie, there is only one regular rule per pronunciation. Primary vowels, however, each have an average of six pronunciations covered by 13 rules. Consonants and secondary vowels have an average of one or two irregular pronunciations. These irregular correspondences involve pronunciations other than those covered by regular rules, except in a minority of cases where one and occasionally two of the pronunciations are the same as regular rules but occur in different environments. Primary vowels, on the other hand, have an average of seven irregular pronunciations, one-half of which are the same as those accounted for by regular rules; they are irregular in that they occur in different environments.

Confronted with the large number of correspondence rules (186, although many of the vowel rules could be combined and then generalized across the primary vowels), and faced with the environmental details specified by the rules, the learner might lose sight of the degree to which the most important information to be gained about each grapheme unit--its pronunciation(s)--can be condensed from rule information. Another aspect of this pronunciation overview that the learner might not deduce is that the pronunciation variability is much lower for both consonants and secondary vowels than for primary vowels, and that he will, therefore, have to concentrate more on environment specifications

of the primary vowel rules for indications of correct pronunciation than he will for other rules.

A study of the correspondences used in this report indicates that almost three-quarters of the 69 grapheme units have a major pronunciation which accounts for over 80% of their exemplars. In fact, 60% of the grapheme units have one pronunciation which accounts for 90-100% of their exemplars. Nineteen of the grapheme units are invariant: they have no lexicon exceptions to their major pronunciation. Most of these are double consonants or digraphs. Only one, aw, is not a consonant. Of the 24 grapheme units that have one pronunciation which accounts for 90-99.9% of their exemplars, most have a single pronunciation with just a few exceptions or a major pronunciation with a secondary minor pronunciation. A few have three or more pronunciations, but the major pronunciation accounts for the vast majority of exemplars. The latter is also true of grapheme units whose major pronunciation accounts for 80-89% of their exemplars.

The only consonants whose major pronunciation accounts for less than 80% of their exemplars are c, cc, g, and th. And the two pronunciations of th should cause students little trouble because they are so similar phonetically ([θ] as in thumb, and [ð] as in this). One-half of the secondary vowels rank over 80%. Only one primary vowel does: the major vowel pronunciation, [ɪ], of y accounts for 85% of its exemplars (y is invariant as a consonant). The vowels are the least reliable: y = 85%, u = 73%, i = 65%, a and e = 42% each, and o = 28%. For o, even if the pronunciation regarding the dialect variation of [o], [ɑ], or [ɔ] (e.g., as in horn) was added to the major pronunciation of [o], it would still only rank 41%.

This study of grapheme unit variability indicated that double consonants are invariant or very nearly so, with the only exception being ss, which has one major pronunciation and two minor ones. Single consonants tend to have a major pronunciation with a few irregular exemplars, or to have a major pronunciation and a secondary pronunciation. The only consonants which do not clearly fit into this description are c, g, s, and t. Consonant digraphs have one or sometimes two pronunciations, with the exception of ch. Secondary vowels have one or two pronunciations, except for ea and ou which each have more than three common pronunciations. Primary vowels are highly variant, with an average of seven pronunciations.

In all, one-half of the 69 grapheme units used in the rules have just one pronunciation, with the allowance of 1-5 exception words; one-quarter have just two pronunciations, with the allowance of 1-5 exception words; and only the remaining one-quarter have three or more pronunciations. Also, as stated above, nearly three-quarters of the grapheme units have a major pronunciation which accounts for over 80% of their exemplars.

Section II

DETAILED DESCRIPTION OF THE SEQUENCE

This section presents a complete description of the sequence. (For a summary of the sequence, see Appendix C.) Spelling-to-sound correspondences are arranged in blocks according to the sequencing criteria already described. The set of 27 blocks is divided into four years; each block is divided into units which contain specific rules. Thus this section is arranged, in order, by year, block, unit, and rule. For each such level, the frequency of exemplars is indicated; for each level below the year level, detailed description of the content is presented.

First Year: Frequency = 797

(One-syllable words; Single consonants; Double consonants; Consonant digraphs; Short vowels)

Block 1: Frequency = 315 (Highest frequency single consonants; Double consonants; General primary vowel Rule 15: short vowels)

Unit 1:	N10, NN10, T10, (TT10),[1] A15, I15	Frequency = 10
Unit 2:	P10, (PP10)	Frequency = 11
Unit 3:	L10 (7),[2] LL10 (3), S10 (27), SS10 (3)	Frequency = 40
Unit 4:	D10 (14), DD10 (1), E15 (32)	Frequency = 47
Unit 5:	M10 (32), (MM10), B10 (28), (BB10), U15 (41)	Frequency = 101
Unit 6:	R10 (45), (RR10), H10 (22), O15 (39)	Frequency = 106

Preparatory to specifying the contents of Block 1, the relative frequency of occurrence within the entire lexicon was determined for each single-letter consonant rule. The nine identified as being the most frequent (r, t, n, l, s, d, p, m, b) were then combined with the short-vowel rules. Instruction on short-vowel rules precedes instruc-

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[1] Block 1 double consonant rules in parentheses have no exemplars at the point where they are listed in the sequence. The first appearance of parenthesized rules is indicated in the text.

[2] Numbers in parentheses are frequencies of individual rules.

tion on long-vowel rules because the short-vowel rules are more productive and less environmentally complex than the long-vowel rules. The central concern was that the sequence should begin with the most productive combination of rules.

The rule-content of 1,1[3] was established by comparing the number of two-, three-, and four-letter lexicon words produced by all possible sequences of short-vowel and selected consonant rules. The optimal initial combination proved to be n, t, a, and i, and so the rules covering these letters formed Unit 1. A similar procedure was used in determining the sequence for the remaining units in Block 1. Each position in the sequence was filled by that rule which, in combination with all previously taught rules, would produce the most exemplars. The rule ordering which resulted from this determination of sequence-position productivity was divided into units of instruction with consideration given to the number of exemplars and instruction increments from unit to unit.

Double consonants are sequenced in the same unit as the corresponding single consonants (e.g., N10 and NN10 both appear in Unit 1) because, in most instances, double consonants have the same pronunciation as their corresponding single consonant's highest frequency rule, which is the rule introduced in Block 1. The learner should treat double consonants as if they were single. There are very few exceptions to this "rule," and they are not sequenced until later. Double consonants which have no exemplars at their time of introduction are reintroduced as their exemplars enter the sequence. Double consonants do not occur in word-initial position. They are primarily found in medial position and thus are more common beginning in Block 9, where two-syllable words are introduced. The only ones in final position which have more than three SWRL lexicon exemplars are ff, ll, ss, and zz. There are no doubled forms for h, j, k, q, w, x, and v.

A possible view of double consonants--one used by Venezky (1970)--is to treat them as a sequence of individual consonants, both of which correspond to single sounds, but by a general rule of English phonology the two sounds are leveled and produced as one, e.g., mm → //mm//[4] → [m]. While theoretically sound, this view was considered too complex for instructional purposes.

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[3] In this notation, the first number signifies the block, and the second the unit.

[4] The double slashes (//...//) are used to enclose non-occurring forms, posited between spelling and pronunciation (Venezky's morphophonemic level).

Following are more specific notes on the content of Block 1. Throughout this discussion of the sequence, general notes about each block and unit will be followed by notes on specific rules contained therein.

1,1: N10: n → [n], e.g., an

NN10: nn → [n], e.g., inn

T10: t → [t], e.g., at

(TT10: tt → [t], e.g., mitt)

A15: a → [æ] / __C(C)#, e.g., at, ant

I15: i → [ɪ] / __C(C)#, e.g., it

Unit 1 is composed of the rules N10, T10 (plus their double consonant rules), A15, and I15, these being the rules which together produced the most, albeit a small number of, exemplars.

NN10: The double consonant nn has the invariant pronunciation [n] as in NN10. The only words in modern English with final nn are inn and proper names.

TT10: The grapheme unit tt has the invariant pronunciation [t] as in TT10. Final tt occurs in only two lexicon words (butt, mitt) and proper names. Although TT10 is sequenced here in 1,1 for reasons discussed above, the first occurrence of TT10 exemplars is in 1,5.

A15: In certain dialects, some words may use [a], e.g., Eastern and British glass, dance.

1,2: P10: p → [p], e.g., pin

(PP10: pp → [p], e.g., pepper)

Unit 2 was limited to one rule (P10) to compensate for the relatively large instructional load necessary in 1,1.

PP10: The grapheme unit pp has the invariant pronunciation [p] as in PP10. There are no occurrences of final pp, except in proper names. The first occurrence of PP10 exemplars is in 9,2.

1,3: L10: l → [l], e.g., lip

LL10: ll → [l], e.g., pill

S10: s → [s], e.g., sat

SS10: ss → [s], e.g., pass

L10: The letter l has only two pronunciations: [l] as in L10, and [ø] as in L20 and in some irregular forms, except for in the word colonel.

LL10: The grapheme unit ll has the invariant pronunciation [l] as in LL10, except in borrowed Spanish words, e.g., tortilla. It is the most frequent double consonant in the lexicon.

S10: The letter s has two major pronunciations: [s] (Rules S10 and S21) and [z] (Rule S20). In addition, palatalization (see 21,3) may result in the pronunciations [š] and [ž]; in a few words s is silent, e.g., island.

Following the introduction of S10, both s → [s] and s → [z] plurals and third-person singular, present tense forms of exemplars are allowed in order to facilitate the approximation of natural speech in beginning reading. The correct pronunciation of the suffix is automatic in speech (e.g., kit[s] vs. kid[z] vs. kiss[ɪz]). If the appropriate response to the printed s does not occur automatically, instruction may explicitly acknowledge the alternative [s] and [z] pronunciations of the suffix -s and the exemplars could be separated for instruction on [s] and [z] pronunciations. The [ɪz] pronunciation is sequenced in 5,3 because of the additional, unstressed vowel. The [z] pronunciation of the inflectional ending -s is the first instance of an alternative to a grapheme unit's most frequent pronunciation, and the first step in preparing the learner to make varying pronunciation responses to a single letter. For all other rules in Block 1, only one pronunciation per letter is taught. Rule environments are not made explicit at this point, since alternative pronunciations depending on contrasting rule environments have not yet been presented.

SS10: After ll, ss is the second most frequent double consonant in the present lexicon. A large number of its occurrences are in the suffixes -less and -ness, introduced on 10,1.

1,4: D10: d → [d], e.g., did

DD10: dd → [d], e.g., add

E15: e → [ɛ] /__ C(C)#, e.g., set, lend

D10: Verb past tenses are presently introduced in 5,4 because of the variations in the pronunciation of the e as well as the d in the -ed suffix (e.g., kill[d] vs. kiss[t] vs. kid[ɪd]). However, it is

possible for the suffix -ed to be in Block 1, as is -s, in order to better approximate natural speech in writing. Earlier introduction is also possible for the verb suffix -ing, and also to a lesser degree for the suffixes -er, -y, and -ly (all of which are presently sequenced in Second Year).

DD10: The grapheme unit dd has the invariant pronunciation [d] as in DD10. The only words, besides proper names, in modern English with final dd are add and odd.

1,5: M10: m → [m], e.g., man

(MM10: mm → [m], e.g., mammal)

B10: b → [b], e.g., but

(BB10: bb → [b], e.g., bubble)

U15: u → [ə] /__C(C)#, e.g., up, bump

M10: The letter m has the invariant pronunciation [m] as in M10 for all words in the SWRL lexicon. Double consonant Rule TT10 is first exemplified here.

B10: The letter b has only two pronunciations: [b] as in B10 and [ø] as in B20 (introduced in 19,4).

MM10 & BB10: The double consonants mm and bb have the invariant pronunciations [m] as in MM10 and [b] as in BB10, respectively. The first occurrence of their exemplars is in 9,2. There are no occurrences of final mm, except in proper names. And other than proper names, the only word in modern English with final bb is ebb.

U15: In Berdiansky et al. (1969), u in the environment /__r was coded U15 or U16. Because of the effects of [r] on the pronunciation of vowels, such words have been recoded U21 and placed in Block 9 with other Vr exemplars.

1,6: R10: r → [r], e.g., run, (far)

(RR10: rr → [r], e.g., hurry)

H10: h → [h], e.g., had

O15: o → [a], e.g., hot, odd

R10: The letter r has the invariant pronunciation [r] as in R10. Postvocalic r is not included in this unit because of its affects on the preceding vowel. Vr correspondences are introduced in Block 9.

RR10: The double consonant rr has the invariant pronunciation [r] as in RR10. It occurs finally in only two lexicon words (burr, purr) and proper names. The first occurrence of RR10 exemplars is in 9,1.

H10: The letter h has only two pronunciations: [h] as in H10, and [ø] as in H20. There is no doubled form hh. On the basis of frequency, H10 would have been placed in a later block, but it was sequenced here, due to the decision that the component letters (e.g., s, t, h) of a digraph (e.g., sh, th in Block 2) should be introduced before the digraphs themselves.

Block 2: Frequency = 51 (Consonant digraphs)

Unit 1: SH10 — Frequency = 29

Unit 2: TH13 (6), TH11 (16) — Frequency = 22

Consonant digraphs are treated as grapheme units because their pronunciation is not a combination of common pronunciations of their component letters. They are introduced in Block 2, prior to the remaining single consonants, because of the high-frequency function word exemplars of Rule TH13 and the need for these function words in the story-construction aspect of reading instruction.

A third high-frequency digraph, NG10, could be added to Block 2. NG10 has a high rule frequency and its exemplars have high individual frequencies. If -ing verb suffixes are allowed in Block 1, as suggested (1,4), then the beginning reader should have no problem reading base words which include the phonogram ing (e.g., sing, thing). And one-syllable NG10 base words having other preceding vowels (e.g., rang, rung) should then present little, if any, more difficulty.

2,1: SH10: sh → [ʃ], e.g., shut

SH10 is the first rule taught in Block 2 because it is the highest frequency digraph and so was considered to be an appropriate choice for introducing digraphs. SH10 also has more exemplars with Block 1 grapheme units than the remaining single consonants, sequenced in Block 4, do. The grapheme unit sh has the invariant pronunciation [ʃ] as in SH10.

2,2: TH13: th → [ð] in pronouns, conjunctions, and other function words, e.g., them, then, this

TH11: th → [θ], e.g., thin

In Unit 2, TH11 is introduced at the same time as TH13, which has function word exemplars, because of the near identity of the two th correspondences, [ð] and [θ], which differ only in voicing. Also, with three lexicon execeptions (clothes, eighth, and isthmus), the grapheme th has only two pronunciations; [θ] as in TH11, and [ð] as in TH12 and TH13. TH12 is not introduced at this point because it occurs in words with long vowels and/or two syllables. TH12 also has a specifiable environment and so will be sequenced after instruction employs rules which require attention to surrounding letters. The TH11 [θ] pronunciation could be contrasted with the TH13 [ð] pronunciation although most speakers probably do not realize that two pronunciations exist for the grapheme unit th. Whether or not the alternate pronunciations of TH11 and TH13 should be specified is a question which should be studied empirically. At present, it appears that instruction may acknowledge the existence of two pronunciations for th, and children may simply be reminded of the alternate pronunciation if an error is made. Once learners read fluently enough to be affected by syntactical constraints, there should be few errors made between the [ð] of th function words and the [θ] of th content words.

Block 3: Frequency = 51 (EE10; Long vowel at end of word)

Unit 1: EE10 (36), E25 (4) Frequency = 40

Unit 2: Y19 Frequency = 11

The rules EE10 and E25 are positioned here in the sequence because their exemplars have high individual frequencies (i.e., they are common words). Rule Y19 is included because, like E25, it has a long vowel pronunciation in a /#(C)C__# environment (or in a stressed syllable). Rule 025 would have been included here for the same reason except it has too few exemplars and it also has exceptions which themselves have high individual frequencies.

3,1: EE10: ee → [i], e.g., beet

E25: e → [i] /#(C)C__#, e.g., we, she

Two spellings with the same pronunciation expose the reader to and prepare him for alternate pronunciations of vowels, which will be elaborated upon in later blocks. This block also adds to the concept of letters representing more than one pronunciation (E25 as opposed to E15).

EE10: The grapheme unit ee has an invariant pronunciation [i] as in EE10, except in the words been, breeches, and creek (in some dialects), and in borrowed French words, such as matinee. The long-

vowel pronunciation following from the double-vowel stimulus is specific to ee. While EE10 is not the most frequent secondary-vowel correspondence (EA10 is), it is sequenced first because the grapheme unit has one common pronunciation. Other secondary-vowel rules--less frequent and/or more variable--are introduced in Second, Third, and Fourth Years.

E25: Rule E25 occurs in a /#(C)C__# (one syllable) environment. An E25 exemplar has no other vowel, whereas an E18 exemplar (introduced in Block 6) has another vowel: VCe#. The letter e in a /#(C)C__# environment has the invariant pronunciation [ĭ], except in the words re and the.

Long e in word-final position introduces some high-frequency words (e.g., he, she) as rule exemplars instead of as sight words. Also, attention is now focused on what will later be crucial word aspects, since this is the first instance of a pronunciation of a grapheme unit depending on an explicit statement of environment (in this case, the end of a word).

3,2: Y19: y → [ay] /__# in stressed syllables, e.g., try

In Unit 2, Rule Y19 occurs in word-final position in one-syllable words (e.g., /__#). Y19 exemplars in stressed syllables in two-syllable words are introduced in Second Year. (Final y in unstressed syllables is covered by Rule Y17; see 10,2).

Block 4: Frequency = 380 (Less frequent consonants)

Unit 1:	F10 (51), FF10 (9), W10 (31)	Frequency = 91
Unit 2:	K10 (37), N20 (34), C12 (59), CK10 (57)	Frequency = 187
Unit 3:	G12	Frequency = 65
Unit 4:	J10 (12), X10 (14), Y10 (6)	Frequency = 32
Unit 5:	V10 (2), Z10 (2), ZZ10 (1)	Frequency = 5

Block 4, the final block of First Year, includes the remaining single consonants (i.e., those not taught in Block 1), as well as the digraph ck. Also, the [ŋ] pronunciation of n (Rule N20) is allowed following the introduction of k.

4,1: F10: f → [f], e.g., fat

FF10: ff → [f], e.g., stiff

W10: w → [w], e.g., wet

The rank-order of the five most frequent consonants in Block 4 is: K10, G12, C12, F10, and W10. F10 and W10 have lower frequencies than do K10, G12, and C12; however, f and w do not have environment-dependent correspondences as do c and g. Therefore, it was decided that F10 and W10 would be less difficult correspondences to learn and so would be more appropriate for Unit 1 than the other rules.

F10: The letter f has the invariant pronunciation [f] as in F10, except in the word of.

FF10: The double consonant ff has the invariant pronunciation [f] as in FF10.

W10: The letter w has only two pronunciations: [w] as in W10, and [ø] as in W20. There is no doubled form ww.

4,2: K10: k → [k], e.g., milk

N20: n → [ŋ] /__ { k, x, qu, g pronounced [g], c pronounced [k] } e.g., thank, (anxious)[5], (banquet), (single), (Lincoln)

C12: c [k] /__ { a, o, u, C, ø } e.g., cat, cot, cut, crash, (picnic)

CK10: ck → [k], e.g., kick

The rules K10, C12, and CK10 are combined for Unit 2 because they share a common pronunciation, [k]; Rule N20 is included because it commonly occurs with K10.

K10: The letter k has only two pronunciations: [k] as in K10, and [ø] as in K20.

N20: Regarding Rule N20, it is optional to acknowledge the automatic sound change of n → [ŋ] /__ [k]. Since Rule N20 was used in coding, this is where it first can have exemplars, due to Rule K10. Even if Rule N20 is not specifically taught, the exemplars would enter here. The pronunciation should be relatively automatic and probably does not need to be explicitly taught. The first occurrence of Rule

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[5]Words in parentheses are exemplars of environments not introduced until later in the sequence, at which point they are noted.

N20 in other less frequent environments is as follows: /__g pronounced [g], 10,2; /__c pronounced [k], 4,5; /__x, 23,3; /__qu, 11,4.

C12: The most frequent and least complex correspondences for the letters c and g are introduced in Block 4--the [k] sound of c and the [g] sound of g, as exemplified in the words cat and gas. The alternative [s] sound of c and [j] sound of g (e.g., ice, age) have a more complex environment and their occurrence is often associated with the long-vowel rule. Consequently, these two rules (C11 and G11) have been sequenced following the introduction of the long-vowel rules (7,1). The doubled forms gg and cc are sequenced in Second and Third Years rather than in this block, because their pronunciations ([g] and [gj], [k] and [ks]) are determined by the following letter. The only lexicon exception to C12 (i.e., to c → [k] for that environment) is the word muscle.

CK10: The grapheme unit ck has the invariant pronunciation [k] as in CK10. This digraph could be considered to be the combination of the two letters: c and k, but since ck always corresponds to one sound, it seems simplest for instructional purposes to treat it as a unit.

4,3: G12: g → [g] /__ $\begin{Bmatrix} a \\ o \\ u \\ C \\ \#r \end{Bmatrix}$ — e.g., gas, got, gum, grin, bag

Rule G12 is sequenced in Unit 3, immediately following C12, because they have the same environmental constraints on pronunciation. G12 has the same environment as C12, and contrasts with G11 just as C12 does with C11.

The only exceptions to G12 (i.e., to g → [g] for that environment) are the word judgment and the letter combination gn (Rule G20; 19,3) in which g → [∅]. Final g occurs only in a small number of words, mostly monosyllables.

Rule G31 (g → [g] /__ $\begin{Bmatrix} e \\ i \\ y \end{Bmatrix}$) is an exception to Rule G11 (g → [j] /__ $\begin{Bmatrix} e \\ i \\ y \end{Bmatrix}$), but it has the same [g] pronunciation as G12. G21 is presently sequenced in 11,6, but it could be resequenced here with G12, although its only exemplars at this point would be get, gift, gig, and gill.

4,4: J10: j → [j], e.g., jet

X10: x → [ks], e.g., box

Y10: y → [y], e.g., yet

The consonants in Units 4 and 5 have very low frequencies. They are nevertheless included at the end of First Year so that, in order to encourage increased independence in dealing with words encountered outside of the Program, beginning readers will have learned at least one (and the major) pronunciation of each letter in the alphabet, with the exception of q, which is represented only in the digraph qu. However, QU10 might be included for the same reason V10 and Z10 are--to provide one pronunciation for each letter.

J10: The letter j has the invariant pronunciation [ǰ] as in J10, except in borrowed Spanish words, such as frijoles. The letter j generally occurs initially, sometimes medially, and never finally; nor can it occur doubled. The grapheme unit dg is used instead of doubled j, and dge or ge is used instead of final j (see G11, 7,1 and VCCe, 14,1).

X10: The letter x has only two pronunciations: [ks] as in X10 and [gz], except for the [z] pronunciation in initial position, as in such nonlexicon words as xylophone. The letter x in final position is always pronounced [ks] as in X10. There is no doubled form xx. The pronunciation [gz] was considered irregular in this study because of the few exemplars (see end of Section V); it occurs when the preceding vowel is unstressed and the following vowel is stressed, e.g., exam.

Y10: As a consonant, the letter y has the invariant pronunciation [y] as in Y10. It is relatively infrequent in modern English, occurring primarily in initial position, and in medial position in a few words such as beyond, canyon, and lawyer. The letter y occurs nine times more often as a vowel than as a consonant. There is no doubled form.

4,5: V10: v → [v], e.g., vest

Z10: z → [z], e.g., zig-zag

ZZ10: zz → [z], e.g., buzz

V10, Z10, and ZZ10 are sequenced last in First Year due to their very low frequency. Since there are only five lexicon exemplars of these three rules at this point in the sequence, others could be introduced orally, and instruction on the correspondence repeated, if necessary, when other exemplars enter the sequence in Second Year. Alternatively, the rules might be postponed until they have more exemplars: V10 and Z10 in 6,1 and ZZ10 in 10,2.

V10: The letter v has the invariant pronunciation [v] as in V10. When [v] is final in a word, v is always followed by e (e.g., have, sleeve), except in names and the slang term rev. Double v is rare in English, and there are no lexicon exemplars.

Z10: The letter z has the invariant pronunciation [z] as in Z10, except in waltz, and in palatalized forms such as glazier and azure (see Section VII). The letter z is the least frequently used letter in modern English.

ZZ10: The grapheme unit zz has the invariant pronunciation [z] as in ZZ10, except in the word pizza. The doubled form zz occurs finally only in a few words.

Second Year: Frequency = 2313

(Two-syllable words; Long-vowels; Vowel-r; Other high-frequency vowel rules; High-frequency consonant digraphs; Unstressed vowels; High-frequency secondary vowels)

Block 5: Frequency = 68 (plus base words with suffixes) (Compounds; Suffixes; NG10)

Unit 1: Compounds using First Year rules (first syllable stressed) — Frequency = 36

Unit 2: The -ing suffix with previously introduced base words.

Unit 3: The -es suffix (plurals and third-person singular, present tense forms) with previously introduced base words.

Unit 4: The -ed suffix (past tense) with previously introduced base words.

Unit 5: NG10 — Frequency = 32

Block 5 introduces two-syllable words, beginning with the least complex, compounds and inflectional suffixes. The exemplars in Units 1-4 involve First Year rules. They thus serve as a review of rules already covered, in addition to introducing the concept of syllables. The digraph ng is also introduced in one-syllable exemplars since the pronunciation is the same as in the -ing suffixes of Unit 2.

It is possible that any or all of Block 5 content could be introduced earlier. A particular case can be made for the early use of the -ing and -ed suffixes, to provide more natural reading material since the progressive and past tenses are common in narrative.

5,1: Compounds using First Year rules (first syllable stressed), e.g., bathtub

In Unit 1, lexicon compounds using First Year rules are introduced, but nonlexicon compounds of other previously taught base words are also allowed. For example, the word standstill is not in the lexicon, but could be introduced here because its components stand and still have already entered the sequence. All words in this unit receive primary stress on the first syllable; compounds with primary stress on the second syllable are introduced in 10,3.

5,2: -ing suffix with previously introduced base words, e.g., running

In Unit 2, which introduces the -ing suffixes of base words, exemplars are not listed, but could be separated for instruction between those which double the final consonant of the base word before adding the -ing suffix (CVC base words where the final consonant is not an x) and those which do not. The -ing noun and adjective forms of base words, which are less frequent than the verb form, could be introduced either here or where now sequenced in 11,1 with two-syllable NG10 exemplars.

5,3: -es suffix (plurals and third-person singular, present tense forms) of previously introduced base words, e.g., boxes

Unit 3 introduces -es [ɪz] plurals and third-person singulars of base words. Exemplars are not listed, but involve base words ending in sh, s, ss, and zz. The -es endings of ch and tch base words should be introduced in 11,2 where CH10 and TCH10 are sequenced for instruction. If confusion arises for the readers concerning the unstressed [iz] pronunciation of the -es suffix, this unit could be postponed until after the unstressed E17 rule has been introduced in 10,1. The -s [s] and [z] endings of all previously taught base words have been allowed as soon after 1,3 as the base words themselves were introduced, with the exception of the -ies endings of Y19 base words; these will be introduced in 10,2 with Y17 exemplars, which also involve suffixed forms in which the y changes to i when es is added.

5,4: -ed suffix (past tense) of previously introduced base words, e.g., stopped

Unit 4 introduces the -ed past tense of base words; such forms are also used as past participles and as adjectives. In speech, the correct pronunciation, [d], [t], or [ɪd], is automatic but exemplars could be separated on this basis if desired. If confusion arises for the readers concerning the unstressed [ɪd] pronunciations of the -ed suffix, these exemplars could be postponed until after E17 has been introduced in 10,1. The -ied endings of Y19 base words will be introduced in 10,2 with the -ied endings of Y17 base words. It would be optional to point out the silent e pronunciation in the -ed [d] and [t] exemplars.

5,5: NG10: ng → [ŋ] /__#, e.g., ring

Unit 5 introduces Rule NG10 in one-syllable exemplars. NG10 is included in Block 5 because its [ŋ] pronunciation was introduced in 5,2 for the -ing suffix. It is suggested that the first NG10 exemplars to be introduced be those in which the vowel is i (e.g., ring, sing, thing, wing) since readers would already be familiar with the -ing correspondence.

As discussed in Block 2, the Rule NG10 could be sequenced with the digraphs SH10, TH11, and TH13. The revision would be appropriate if the -ing suffix were sequenced in Block 1; moreover, Rule NG10 itself is of high frequency, and its individual exemplars are too.

Block 6: Frequency = 260 (General primary vowel Rule 11)

Unit 1: E18, A11 (109), I11 (68) Frequency = 177

Unit 2: O11 (60), U11 (16), E11 (3), EE10 + E18 (4) Frequency = 83

Block 6 introduces general primary vowel Rule 11, the VCe long-vowel rule, which is the second most frequent type of vowel rule after general primary vowel Rules 15 and 16, the short-vowel rules. The five individual rules are ordered by frequency and divided into two units to lessen the learning load. The VCe rules are the first rules in the sequence for which the determining environment specifies a particular letter (final silent e), and these rules should be contrasted with the VC(C) short vowel environmental characteristics (e.g., cap-cape, bit-bite). Rule E18 covering the final silent e in VCe words can also be contrasted with Rule E25 (3,1) covering the pronounced final e in one-vowel exemplars such as he.

When the consonant in VCe words is r, the pronunciation of the vowel is often affected, particularly as noted below. In some dialects the r is not pronounced, or is pronounced as [ə].

6,1: E18: e → Ø /__#, e.g., name, (edge)

A11: a → [e] /__Ce#, e.g., name

I11: i → [ay] /__Ce#, e.g., fine

E18: Final e is silent, except when part of a secondary vowel or when the only vowel in a word (see Rule E25). Final silent e performs a number of functions (see Jespersen, 1965, p. 193). Its primary use is as a marker of the long-vowel pronunciation in general primary vowel Rule 11. It also marks the pronunciation of c, g, and th (see Rules C11, G11, and TH12). A final e after s in some words differentiates between a base form (e.g., dense) and an inflected form (e.g., dens). The letters v and u generally do not occur finally, but rather are followed by an e; e.g., have, continue. Sometimes final e may have two functions, as in nice where it marks both the i → [ay] (Rule I11) and the c → [s] (Rule C11) correspondences.

A11: Rule A11 generally is automatically pronounced [ɛ] (or [æ] in some dialects) in an /__re environment.

6,2: O11: o → [o] /__Ce#, e.g., home

U11: u → [(y)u] /__Ce#, e.g., cute, crude

E11: e → [i] /__Ce#, e.g., eve

O11: Rule O11 has the dialect variation [o], [ɔ], [a] in the /__re environment.

U11: Some exemplars of Rule U11 are always pronounced [yu], some are always pronounced [u], and others can be pronounced either way. When following [r] or [l], it is always [u]; when following [t, d, s, z, š, ž, č, ǰ, n], it is generally [u], although there is some dialect variation. When following vowels or other consonants, it is generally [yu]; when word initial, it is always [yu]. The [yu] and [u] pronunciations are designated for the exemplars in the word list in Section IV.

E11: Because of its low frequency, Rule E11 may be postponed.

Block 7: Frequency = 36 (C11, G11; Suffixes with general primary vowel Rule 11)

Unit 1: C11 (26), G11 (10) Frequency = 36

Unit 2: -s, -d, and -ing suffixes added to words with general primary vowel Rule 11

7,1: C11: c → [s] /__$\begin{Bmatrix} e \\ i \\ y \end{Bmatrix}$, e.g., cent, lace, (city), (cypress)

G11: g → [ǰ] /__$\begin{Bmatrix} e \\ i \\ y \end{Bmatrix}$, e.g., gem, age, gin, (gym)

This unit introduces the alternative pronunciation of c and g. These rules state that c → [s] and g → [ǰ] when followed by e, i, or y. These correspondences require discrimination of an environment which may occur in various places in a word, and which specifies several alternate letter choices as determiners of the application of the rule. Rules C11 and G11 are sequenced to follow instruction on general primary vowel Rule 11 because they most often occur in the VCe environment, as Vce and Vge. Not all environments of Rules C11 and G11 are exemplified in this unit. Their first occurrences are as follows: C11 /__i, 9,2; C11 /__y, 17,2; G11 /__y, 10,2.

When the environments for C11 and G11 are contrasted with the more frequent environments for C12 and G12, it should be pointed out to the readers that C11 and G11 most often occur in a VCe environment and that C12 and G12 cannot occur in this environment. The G12 pronunciation, [g], however, can occur initially or medially when followed by e or i; e.g., get, girl. These frequent exceptions to

G11 are coded as G31 and are sequenced in 11,6. Other exceptions to Rules G11 and C11 involve palatalizations (see Section VII).

The letter combination sc is pronounced [s] when it precedes e, i, or y as in scene and scissors. This is the result of application of Rules S10 and C11 (sc → //ss//) and then leveling of the double consonant (//ss// → [s]).

7,2: -s, -d and -ing suffixes added to words with general primary vowel Rule 11, e.g., races, raced, racing

Unit 2 introduces the -s, -d, and -ing suffixes for base words with general primary vowel Rule 11, just as Block 5 introduced these suffixes for base words with general primary vowel Rule 15. For the -s suffix, the final e remains and is silent, except when the final consonant is c, g, s, or z; then the suffix is automatically pronounced [ɪz]. For the -d suffix the final e remains and is silent, except when the final consonant is d or t; then the -ed suffix is pronounced [ɪd]. For the -ing suffix, the e is dropped. Exemplars for these base words plus suffixes are presently uncoded although the base words themselves are coded and are sequenced for instruction in Blocks 6 and 7.

Block 8: Frequency = 68 (Two-syllable words, first syllable stressed)

Unit 1: Compounds with rules in Blocks 5-7 Frequency = 45

Unit 2: A16 (6), I16 (3), U16 (3), E16 (2), O16 (9) Frequency = 23

Block 8 is, in effect, a review block and a further step in the gradual introduction of two-syllable words.

8,1: Compounds with rules in Blocks 5-7, e.g., livestock

All but two of the compounds, which involve rules from Blocks 5-7, have general primary vowel Rule 11 in them. For the compounds which have such correspondences in the first part of the compound, it should be noted that it is because these exemplars are compounds that the e, now in the middle of the bigger word, is still silent and not pronounced.

8,2: A16: a → [æ] /__CC..., e.g., accent

I16: i → [ɪ] /__CC..., e.g., insect

U16: u → [ə] /__CC..., e.g., umpire

E16: e → [ɛ] /__ CC .., e.g., reptile

O16: o → [a] /__CC..., e.g., costume

Unit 2 introduces general primary vowel Rule 16 in two-syllable words with the first syllable stressed. Rule 16 has the same short-vowel pronunciation in a /__CC... environment as general primary vowel Rule 15, taught in First Year, did in a /__C(C)# environment. This is the first instance in the sequence of two-syllable words other than compounds and base words plus suffixes. Only exemplars having the first syllable stressed are taught here so that readers will not have to consider stress as well as length. Words with the second syllable stressed, which are less frequent, are not introduced until the end of Block 10, and could even be postponed until the end of this Second Year sequence.

In Berdiansky et al. (1969) u in the environment /__rC was coded U16. However, because of the effects of [r] on the pronunciation of vowels, such words have been recoded U21 and sequenced in Block 9 with the other Vr exemplars.

Block 9: Frequency = 323 (Vowels before r)

Unit 1: one-syllable: A21 (40), O21 (26), U21 (15), I21 (14), E21 (12) Frequency = 107

Unit 2: two syllables, first syllable stressed: E21 (151), U21 (5), I21 (4), A21 (18), O21 (15) Frequency = 193

Unit 3: A25 (11), O22 (12) Frequency = 23

Block 9 introduces the next most frequent primary-vowel rules (after short and long vowels) in one-syllable words: those covering the pronunciation of a vowel when followed by r. Rules E21, I21, and U21 specify the same pronunciation, [ər] (phonetically one sound), and are grouped together for this reason. These three rules have the same pronunciation whether they are stressed or unstressed.

In some dialects, the r following a vowel is not pronounced (Rules E21, I21, and U21, e.g., fur [fə]), or is pronounced as [ə] (Rule O21, e.g., for [foə]), or results in a lengthening of the vowel (Rule A21, e.g., farm [fa:m]).

The Vr rules are followed by A25 and O22, which are rules covering exceptions to A21 and O21 in which a different pronunciation occurs when ar or or are preceded by w. These rules also provide the first instance in the sequence of a correspondence with an environment specifying what precedes as well as what follows the letter involved.

9,1: A21: a → [a] /__ $\{^{rC}_{r\#}\}$, e.g., cart, car

O21: o → [o], [ɔ], [a] /__ $\{^{rC}_{r\#}\}$, e.g., horn, for

U21: u → [ə] /__{rC / r#}, e.g., burn, fur

I21: i → [ə] /__{rC / r#}, e.g., bird, sir

E21: e → [ə] /__{rC / r#}, e.g., herd, her

Unit 1 introduces Vowel 21 rules in one-syllable words.

U21: Double consonant Rule RR10 is first exemplified here.

O21: There is considerable dialect variation in the pronunciation of or, but most individual speakers will use only one pronunciation.

9,2: E21: e → [ə] /__{rC / r#}, e.g., western, father
(plus -er suffix with previously introduced words, e.g., banker.)

U21: u → [ə] /__{rC / r#}, e.g., sunburn, murmur

I21: i → [ə] /__{rC / r#}, e.g., birdseed

A21: a → [ə] /__{rC / r#}, e.g., farmer, streetcar

O21: o → [o], [ɔ], [ə] /__{rC / r#}, e.g., order

Unit 2 introduces the Vowel 21 rules in two-syllable words having the first syllable stressed. Double consonant Rules BB10, MM10, and PP10 are first exemplified in this unit.

E21: E21 is taught first in Unit 2 because it has far more exemplars than any of the other Vowel 21 rules. The unstressed forms of er are allowed both because of their high frequency and because their pronunciation [ər] is the same as for stressed E21, taught in 9,1.

Instruction on E21 in Unit 2 commences with the -er agent noun forms and comparative adjective forms of base words, including those in which the final consonant is doubled before the -er. Agent and comparative forms of other previously taught words can also be taught here. The -er suffix with words ending in final silent e (e.g., baker) are not sequenced here (instead, at 17,2), but could be if desired.

In most dialects, base words ending in ng retain their regular NG10 pronunciation, [ŋ], when the -er agent form suffix is added, but change to a [ŋg] pronunciation for the -er comparative form; e.g., singer vs. stronger.

I21 & U21: I21 and U21 also have the same pronunciation, [ər], when stressed or unstressed but there are no lexicon exemplars of unstressed ir.

A21 & O21: Unstressed ar and or receive instruction in 10,1 with other unstressed vowels rather than here, since their unstressed pronunciation, [ər], differs from their stressed pronunciations.

9,3: A25: a → [o] / {w, wh, qu} __r, e.g., war, (wharf), (quart)

O22: o → [ə] /w__rC, e.g., word, worth

Rules A25 and O22 share the /w__rC environment, but A25 also occurs in additional environments.

A25: Rule A25 provides for the pronunciation of ar when preceded by [w], whether spelled w, wh ([hw] or [w]), or qu ([kw]). Only the /w__r environment is introduced here. The /wh__r and /qu__r environments enter the sequency in 11,3 and 11,4 with WH10 and QU10, respectively. A25 has possible dialect variation which may be acknowledged if necessary. The only exception to A25 is -ward when it is an unstressed syllable (i.e., awkward, forward), in which case the pronunciation of the ar is [ər], just as it is for any other unstressed Vr (10,1).

O22: O22 occurs in a /w__rC environment (e.g., work). The only exception to O22 is the word worn (derived from wore), which is covered by Rule O21.

Block 10: Frequency = 575 (Unstressed vowels; Two-syllable words with second syllable stressed)

Unit 1: General primary vowel Rule 17, first syllable stressed: I17 (34), U17 (6), E17 (89), A17 (45), O17 (37) Frequency = 211

Unit 2: Y17 (143), LE22 (84) Frequency = 227

Unit 3: Compounds, second syllable stressed Frequency = 8

Unit 4: Two-syllable words, second syllable stressed: I16 (14), U16 (5), A16 (3), O16 (2), E21 (5), O21 (2), EE10 (9) Frequency = 40

Unit 5: General primary vowel Rule 17, second syllable stressed: A17 (38), E17 (20), O17 (24), U17 (5), I17 (2) Frequency = 89

Block 10 introduces the unstressed ([ə] or [ɪ]) pronunciation of unstressed vowels. Not all unstressed vowels are reduced to a [ə] or [ɪ] pronunciation, and for any one speaker, a given vowel when reduced may be pronounced [ə] in one word and [ɪ] in another word

(e.g., for some speakers, the u in circus would be pronounced [ɪ], while the u in album would be pronounced [ə]). Beginning readers often have difficulty with the unstressed vowel concept because when they are first learning to decode words, they tend to give a stressed pronunciation to all the vowels. This problem, however, will probably be largely overcome as the readers become more familiar with stress variation. In regard to stress patterns, readers may benefit from the information that there are many times more words with the first syllable stressed than with the second syllable stressed. In the SWRL lexicon, the ratios are 4:1 for two-syllable words and 2:1 for three-syllable words. Four-syllable words have more complex stress patterns.

10,1: (First syllable stressed)

I17: i → [ə], [ɪ] in unstressed syllables, e.g., pilgrim, furnish

U17: u → [ə], [ɪ] in unstressed syllables, e.g., album, campus

E17: e → [ə], [ɪ] in unstressed syllables, e.g., tunnel, hidden

A17: a → [ə], [ɪ] in unstressed syllables, e.g., final, canvas

O17: o → [ə], [ɪ] in unstressed syllables, e.g., cotton, actor

Unit 1 commences with Rules I17 and U17 because the unstressed pronunciation of each is often the same as its short pronunciation ([ɪ] and [ə], respectively). Rules E17, A17, and O17 are then sequenced by frequency.

U17: This rule was used only with words in which [ə] could not be indicated by using Rules U15 and U16, when u appeared in an unstressed syllable.

E17: Superlatives (-est) of base words are uncoded in the lexicon but should be taught with E17, perhaps as the first exemplars of this rule. For the suffixes -less, -ness, -en, and -ed, these forms added to any previously taught base words may be used, as well as the lexicon exemplars.

A17 & O17: A17 and O17 exemplars in the environment /__r should be noted carefully because ar and or change from Rules A21 and O21 pronunciations when stressed to A17 and O17 pronunciations ([ər]) when unstressed. On the other hand, er, ir, and ur have the same pronunciation ([ər]) when either stressed or unstressed.

10,2: Y17: y → [ɪ] /__# in unstressed syllables, e.g., candy

LE22: le → [əl] /C__#, e.g., little

The rules Y17 and LE22 are included in Block 10 with unstressed vowels because they are always unstressed. These two rules occur at the end of the second syllable in words having the first syllable stressed. They might thus precede the unstressed vowels of 10,1. All their exemplars occur in the environment /...C__#.

LE22: The grapheme unit le is invariantly pronounced [əl] (phonetically one sound: syllabic [l]) as in LE22 when in the environment /...C__# (cf, le → [l] /V__#, e.g., pale).

Y17: The pronunciation of Y17, unstressed y in word-final position, may vary between [ɪ] and [ɪ]. In isolation [ɪ] is more common, but unstressed [ɪ] (cf, general primary vowel Rule 17) is often used in connected speech.

Y17 primarily occurs in the -ly adverbial suffix and -y adjectival suffix. The rule is productive and uncomplex allowing for additional practice on previously introduced rules contained in its exemplars. For both Y17 and Y19 (introduced in 3,2), the y remains when -ing is added (e.g., trying, hurrying) and before other suffixes beginning with the letter i (e.g., -ish, -ist). Before suffixes not beginning with the letter i, however, in both Y17 and Y19 the y changes to i, retaining the y pronunciation of the base word. For past tense and for plural and third person singular forms, -ed and -es, respectively, are added, e.g., tried, hurried; tries, hurries. Y17 also changes to i before other suffixes not beginning with the letter i (e.g., -er, -est, -less, -ly, -ment, -ness). Before these same suffixes, however, Y19 is unpredictable as to whether it changes to i or remains y.

10,3: Compounds (second syllable stressed), e.g., herself

Units 3-5 introduce two-syllable words having the second syllable stressed. Heretofore in the sequence, the two-syllable words taught have had the first syllable stressed. In these units exemplars with the second syllable stressed are introduced, thus providing the contrast necessary for identifying the concept of stress. The first exemplars with the second syllable stressed are compounds, presented in Unit 3, all composed of previously taught rules. Non-lexicon compounds of other previously taught base words are also allowed.

10,4: (Second syllable stressed)

I16: i → [ɪ] /__CC..., e.g., inform

U16: u → [ə] /__CC..., e.g., unless

A16: a → [æ] /__CC..., e.g., accept

O16: o → [ɑ] /__CC..., e.g., trombone

E21: e → [ə] /__$\{^{rC}_{r\#}\}$, e.g., perhaps, (prefer)

O21: o → [o], [ɔ], [ə] /__$\{^{rC}_{r\#}\}$, e.g., cornet

EE10: ee → [i], e.g., indeed

Unit 4 introduces noncompound two-syllable words with the second syllable stressed, utilizing all previously taught rules, except general primary vowel Rule 17, that could have such exemplars at this point in the sequence. Many of the exemplars involve prefixes such as in-, dis-, un-.

10,5: (Second syllable stressed)

A17: a → [ə], [ɪ] in unstressed syllables, e.g., alike

E17: e → [ə], [ɪ] in unstressed syllables, e.g., except

O17: o → [ə], [ɪ] in unstressed syllables, e.g., connect

U17: u → [ə], [ɪ] in unstressed syllables, e.g., subtract

I17: i → [ə], [ɪ] in unstressed syllables, e.g., divide

Unit 5 introduces general primary vowel Rule 17 exemplars which are two-syllable words having the second syllable stressed. Most of these exemplars involve prefixes, such as a-, ex-, con-, pro-.

Block 11: Frequency = 214 (Consonant digraphs; GG10, CC12, G31)

Unit 1:	NG10	Frequency = 41
Unit 2:	CH10 (68), TCH10 (29)	Frequency = 97
Unit 3:	WH10	Frequency = 23
Unit 4:	QU10	Frequency = 24
Unit 5:	GG10 (17), CC12 (2)	Frequency = 19
Unit 6:	G31	Frequency = 10

Block 11 introduces rules for the common consonant digraphs ch, wh, and qu; the remaining digraphs, all of low frequency, are introduced in Block 20. Also covered are nonverb exemplars of NG10, the double consonant rules GG10 and CC12, and Rule G31, a common exception to G11.

11,1: NG10 (two syllables): ng → [ŋ] /__#, e.g., dressing

Rule NG10 (first introduced in Block 5) is used here in two-syllable words. Many of the words are suffixed forms with -ing which have specialized noun or adjective uses, e.g., spelling, thrilling. These exemplars can also be verbs and so could be sequenced in 5,2 with the uncoded -ing verb forms of base words. This unit also includes NG10 in exemplars which are not verb, noun, or adjective forms derived from base words (e.g., cunning, darling). These too, are sequenced here, but if the noun and adjective forms are moved up in the sequence, these could be as well. The sequence ng has other pronunciations besides [ŋ]: [ŋg] (N20 + G12 or N20 + G31) and [ŋǰ] (N10 + G11). These correspondences may be introduced in individual words as they occur, without special note.

11,2: CH10: ch → [č], e.g., church

TCH10: tch → [č], e.g., match

Rules CH10 and TCH10 are sequenced together in Unit 2 because of their shared pronunciation, [č], and complementary distributions. CH10 occurs primarily in word-initial position and following a consonant or secondary vowel in word-final position. TCH10, on the other hand, does not occur initially, and it primarily occurs following a short vowel in word-final position. Base words ending in ch and tch use -es plural and third person singular suffixes, which should be included in this unit.

The grapheme unit tch is invariantly pronounced [č] as in TCH10; ch may also be pronounced [k] (Rule CH31, 20,2) and [š].

11,3: WH10: wh → [hw] or [w], e.g., when

Rule WH10 has the dialect variation [w] or [hw]. In addition, wh may be irregularly pronounced [h], e.g., who. Exemplars of Rule A25 (see 9,3) in the environment /wh__r, are introduced in this unit.

11,4: QU10: qu → [kw], e.g., quick

The sequence qu is considered a grapheme unit because, in English words, the letter q is always followed by u. The grapheme unit qu, has only two pronunciations: [kw] as in QU10, and, irregularly, [k]. The exemplars for Rule A25 (see 9,3) which occur in the environment /qu__r are introduced in this unit.

11,5: GG10: gg → [g], e.g., egg, wiggle

CC12: cc → [k] /__ {a, o, u}, e.g., yucca, accord, hiccup

The double consonant rules GG10 and CC12 are sequenced in 11,5 rather than in 4,2 and 4,3 with C12 and G12 because all of their exemplars (except egg) occur in two-syllable words and most of these exemplars include rules introduced in Block 10.

GG10: The grapheme unit gg is invariantly pronounced [g] as in GG10, except in a few words such as suggest, where the [gǰ] pronunciation is determined by the following vowel.

CC12: The grapheme unit cc has two pronunciations: [k] as in CC12, and [ks] as in CC11. Both of these rules have so few exemplars (CC12: 9, and only two of these can enter the sequence here; CC11: 6) that it might be advisable to postpone instruction on CC12 until 20,4, where CC11 and the other lowest frequency consonants are sequenced.

11,6: G31: g → [g], e.g., get, girl

G31 is an exception to Rule G11, which has the same /__ {e, i, y} environment. As an alternative to sequencing G31 here in Block 11, its one-syllable exemplars could be taught either with Rule G12 (g → [g]) in 4,3, or as exceptions to Rule G11 in 7,1 (although there would only be four exemplars at either point). The two-syllable nger exemplars of G31 could then be introduced in Block 11 or in Third Year.

Block 12: Frequency = 486 (High-frequency secondary vowels)

Unit 1:	AY10	Frequency = 51
Unit 2:	EA11 (145), EA31 (44)	Frequency = 189
Unit 3:	OO12 (89), OO11 (54)	Frequency = 143
Unit 4:	OW11 (60), OW12 (43)	Frequency = 103

The only secondary vowel rule to have entered the sequence before Block 12 is Rule EE10, which was introduced in 3,1 because of its high rule frequency and its high individual exemplar frequencies. Also, since the grapheme unit ee has the same pronunciation as its individual letter's name ([i], e), EE10 is considered to be instructionally uncomplex. The other secondary vowel rules have been divided into three groupings according to the combined considerations of frequency, contrasting homographs (i.e., same spelling but different pronunciations), and homophones (i.e., same pronunciation but different spellings), a number of which are in complementary distribution.

The first group of secondary vowels, introduced here, have high rule frequencies and high individual exemplar frequencies. Three of the rule pairs have contrasting homograph correspondences presented with them. The second group of secondary vowels, introduced in Block 16, have medium frequencies (with the exception of high-frequency AI10 and OU10, which could be resequenced into this block); the third group of secondary vowels, introduced in Block 26, have low rule frequencies.

The contrasting correspondences for the grapheme units ea, oo, and ow are sequenced together because each correspondence has a high rule frequency and/or high individual exemplar frequencies and because none has specifiable environmental constraints which are simple enough for the younger reader to remember. If it is found that it is not practical to teach alternate pronunciations simultaneously, then the contrasting correspondences could be sequenced in a later block.

12,1: AY10: ay → [e], e.g., day

The introduction of secondary vowels in Block 12 commences with Rule AY10 because of that rule's regularity and its high individual exemplar frequencies. The grapheme unit ay is invariantly pronounced [e] as in AY10, except for aye and says (although, in unstressed syllables, ay may be pronounced [i] or [ɪ], e.g., Sunday).

If the learning load will allow, it is possible to sequence Rule AI10 here with AY10 rather than in 16,1, as at present. As well as having a high rule frequency, Rule AI10 has the same pronunciation as, and is in complementary distribution with, AY10. The letters i and y, and u and w, are in complementary distribution in several secondary vowels: ai/ay; au/aw; ei/ey; eu/ew; oi/oy; and ou/ow. In general, y and w are found in word-final position and i and u elsewhere (e.g., day/daily; coy/coil), although this pattern does not always hold. Secondary vowels, in fact, are generally limited in their distribution; e.g., several of them do not occur initially.

12,2: EA11: ea → [i], e.g., each

EA31: ea → [ɛ], e.g., bread

EA11 and EA31 share most of their environments, so it is very difficult to give readers a basis for determining the correct pronunciation of the grapheme unit ea, except that EA11 does have three times more exemplars than EA31. Some homographs with ea can be distinguished only by their grammatical function, e.g., lead. EA11 and EA31 sometimes alternate for present and past tenses, e.g., read/read, mean/meant.

The following environments apply to EA11, but not EA31: /__#, c, ch, g, l, m, p, sh; se, son, sy, ture, the. The last five are introduced in Third Year, where their component rules (e.g., S20) are sequenced.

The environment /__lth applies to EA31, but not EA11. The environments /__ sant, ther, sure, also apply to EA31, but not to EA11; the first two will be introduced in Third Year, the latter in Section VII. Other environments, e.g., /__$\begin{Bmatrix} d \\ f \\ r \end{Bmatrix}$, apply both to EA11 and EA31.

12,3: 0011: oo → [u], e.g., brook

0012: oo → [u], e.g., book

The following environments apply to 0011, but not to 0012: /__#, n, m, p, st, th; h, se. The last two will be introduced in Third Year. There is no environment that applies only to 0012 and not to 0011, although the environment /__k applies primarily to 0012.

12,4: OW11: ow → [o], e.g., below, own

OW12: ow → [aw], e.g., allow, owl

The grapheme unit ow has only two pronunciations: [o] as in OW11, and [aw] as in OW12, except for the word knowledge. Also, in some dialects, an unstressed ow is pronounced [ə], e.g., fellow.

The primary environment for OW11 is /__#, particularly at the end of two-syllable words, but a number of OW12 words have the /__# environment in one-syllable words. There are no other specifiable environments to distinguish the use of [o] or [aw] for the grapheme unit ow.

Because of its high frequency and its being in complementary distribution with OW12 (ow → [aw]), Rule OU10 (ou → [aw]) could be appropriately sequenced, following OW12, in this block rather than in 16,2 with the medium-frequency secondary vowels.

Block 13: Frequency = 198 (Additional common primary vowel rules)

Unit 1: 031 (38), U31 (35) Frequency = 73

Unit 2: A23 (26), 023 (26) Frequency = 52

Unit 3: I22 (21), 024 (52) Frequency = 73

Block 13 introduces some additional common rules for primary vowels. Teaching these rules, rather than just teaching as sight words the high-frequency words containing these rules, not only allows the introduction of additional lower frequency words, but continues the emphasis on the regularity of English spelling-to-sound correspondences. Instruction can be based on specifiable environments, when this is a rule characteristic. When not, the exemplars can be taught as groups of words, each group manifesting an exception to previously learned rules. The rules vary in predictability from the highly predictable Rule A23 to the unpredictable 031.

13,1: O31: o → [ə], e.g., won, love

U31: u → [ʊ], e.g., bull, push

O31: Rule O31 occurs in stressed syllables where other pronunciations would be expected. In fact, there are no O31 environments which do not also apply to other o rules. Rule O31 generally occurs in the following environments: /__ n, m, th, v.

U31: Rule U31 occurs primarily in the suffix, -ful, as well as in the word full and compounds of it. Otherwise, its environments are generally /$\{^{b}_{p}\}$__$\{^{ll}_{sh}\}$. No other rules for the letter u (e.g., U15, U16, U17) have these environments.

13,2: A23: a → [ɔ] /__$\begin{Bmatrix} ll \\ ld \\ lt \\ lk \end{Bmatrix}$#, e.g., ball, bald, salt, (walk)

O23: o → [o] /__lC#, e.g., roll, told, colt, (yolk)

Unit 2 introduces Rules A23 and O23, both of which occur in the environments /__$\begin{Bmatrix} ll \\ ld \\ lt \end{Bmatrix}$#. Rules A23 and O23 also occur in the environment /__lk, but these exemplars, due to the silent l, are not introduced until 19,5.

O23: Rules O23 also applies in the environment /__l# in stressed syllables. The only lexicon exemplars are control and patrol, which are presently coded as exceptions, but which could be sequenced in this unit.

13,3: I22: i → [ay] /__$\begin{Bmatrix} nd \\ ld \\ gn \end{Bmatrix}$#, e.g., find, wild, (sign)

O24: o → [ɔ] or [a] /__$\begin{Bmatrix} fC \\ g\# \\ ng \\ nk \\ ss \\ st \\ th \end{Bmatrix}$, e.g., soft, dog, song, honk, moss, lost, moth

I22: Rule I22 is introduced in the environments /__$\{^{nd\#}_{ld\#}\}$. It also occurs in the environment /__gn#; these exemplars, due to the silent g (Rule G20), are sequenced in 19,3 with the introduction of silent letters.

O24: The environments /__$\begin{Bmatrix} fC \\ g\# \\ ng \\ nk \end{Bmatrix}$ apply to Rule O24, but not to any

other o rules. The following environments apply to Rule 024, but also to other o rules: /__ {ss, st, th}. The environment /__st will be deleted from future versions of this rule since there are nearly as many exceptions (pronounced [o]) as exemplars (cf, lost and most).

Rule 024, as with any rule involving [ɔ], has the dialect variant [a]. In dialects without [ɔ], this rule does not differ from Rule 015. In dialects where [a] and [ɔ] contrast, the occurrences of these sounds "is highly erratic, varying not only regionally, but also from word to word" (Kurath, 1964, p. 112).

Block 14: Frequency = 85 (Nonlong vowels in VC(C)e words)

Unit 1: Stressed VCCe# — Frequency = 40

Unit 2: Stressed VrCe# — Frequency = 18

Unit 3: Unstressed VCCe# and VCe# — Frequency = 27

Block 14 introduces the short vowel pronunciations in the environment /__CCe, which is similar to both the previously specified short vowel (/__CC) and long vowel (/__Ce) rules. In the case of VCCe exemplars, however, the final silent e does not mark a long vowel pronunciation, but rather the e marks a morphemic boundary and/or the pronunciation of the final consonant. Nearly all of the exemplars in this block, the final consonant is c, g, s, or v. Without an e following them, c and g would be pronounced [k] and [g] rather than [s] and [ǰ] (e.g., compare the nonword sinc with since, and urg with urge). Without the marker e, an s might be pronounced [z] or appear to be a plural (e.g., dens vs. dense). And final v does not occur in English (e.g., twelv would be a nonword).

14,1: Stressed VCCe#, e.g., dance

In Unit 1, the major consonants in the VCCe environments of these short vowels are: dge, nCe, (nce, nge, nse), and lCe (lve, lse, lge), e.g., badge, dance, and shelve.

14,2: Stressed VrCe#, e.g., nurse

In Unit 2, the consonants in the VrCe environments of these vowels are: rse, rve, rge, e.g., curse, carve, and charge. As usual, the presence of r after a vowel affects its pronunciation, based on Rules A21, E21, I21, 021, and U21 (Block 9).

14,3: Unstressed VCCe# and VCe#, e.g., absence

In Unit 3, the major consonants in the VCCe and VCe environments of the unstressed vowels (general primary vowel Rule 17, Block 10) are: nce, ge, and ce, e.g., absence, bandage, and furnace. If readers are too confused by the nonlong-vowel pronunciations in VCe exemplars, as opposed to the more regular use of general primary vowel Rule 11, then the correspondences and exemplars in this unit could be postponed.

Third Year: Frequency = 3253

(2-3 grade-level words; Three-syllable words; Medium-frequency primary and secondary vowels; Low-frequency consonants; Silent letters; Major palatalizations; Affixes; Three-syllable stress patterns)

Block 15: Frequency = 915 (Review, employing 2-3 words covered by First- and Second-Year rules)

Unit 1: 2-3 one-syllable words with First-Year rules — Frequency = 84

Unit 2: 2-3 words with Second-Year rules — Frequency = 831

Block 15 is a review block, employing all 2-3 grade-level words covered by First- and Second-Year rules. It provides an opportunity for expanding reading vocabulary by adding more rule-based words known by the child.

Unit 2 provides for the systematic review of Second Year correspondences. Since grade leveling of the present lexicon is not completely accurate, some of these words could be added to the Second Year word list if desired. The words in this unit might also be used for Second Year word-attack study.

Block 16: Frequency = 494 (Secondary vowels of medium frequency)

Unit 1: AI10 — Frequency = 140

Unit 2: OU10 — Frequency = 98

Unit 3: OE10 (7), OA10 (83) — Frequency = 90

Unit 4: AW10 (44), AU10 (17) — Frequency = 61

Unit 5: OI10 (26), OY10 (22) — Frequency = 48

Unit 6: UE10 (20), UI10 (7), EW10 (30) — Frequency = 57

Block 16 introduces secondary vowels of medium frequency. High-frequency secondary vowels are introduced in Block 12; low-frequency ones are introduced in Block 26. If desired it would be possible to move some of the correspondences in Block 16 to one of the other blocks of secondary vowels, and vice versa.

16,1: AI10: *ai* → [e], e.g., *pain*

The secondary vowel *ai* occurs initially and medially and is in complementary distribution with *ay*, which occurs finally (AY10, 12,1)

In some words, ay changes to ai when a suffix is added, e.g., day, daily (cf, -ly, 17,3). For ai in unstressed syllables, see Rule AI17 (26,3). Major exceptions to Rules AI10 and AI17 are said and again, both with [ɛ].

16,2: OU10: ou → [aw], e.g., found

Rule OU10 occurs initially and medially, and is in complementary distribution with Rule OW12 (12,4), which generally occurs finally. There are four other minor pronunciations for ou (introduced in Block 26), although they occur in several high-frequency words.

16,3: OE10: oe → [o] / __ #, e.g., toe

OA10: oa → [o], e.g., boat

Both secondary vowels in this unit are pronounced [o]. OE10 comes first because of its similarity to O11 (6,2) with oCe.

CE10: Rule OE10 occurs in word-final position. Medial oe is generally a combination of o and e, e.g., poet (see Rule O26, 25,2). The major exception to Rule OE10 is the word shoe and its derivatives.

OA10: The major exception to this rule is the word broad and its derivatives.

16,4: AW10: aw → [ɔ], e.g., law

AU10: au → [ɔ], e.g., cause

These two secondary vowels are in complementary distribution, aw generally occurring finally and au occurring initially and medially. The pronunciation of these secondary vowels is [ɔ], or for some dialects and speakers, [ɑ] (cf, Rule O15).

AW10: This rule is invariant, with no exceptions.

AU10: This rule is nearly invariant, with only a few exceptions, notably laugh and aunt and their derivatives.

16,5: OI10: oi → [oy], e.g., coin

OY10: oy → [oy], e.g., boy

These two secondary vowels are in complementary distribution, oy generally occurring finally and oi occurring initially and medially. Both rules are nearly invariant, with rather minor exceptions.

16,6: UE10: ue → [(y)u], e.g., due, hue

UI10: ui → [(y)u], e.g., fruit, juice

EW10: ew → [(y)u], e.g., few, new

All three secondary vowels in this unit have the same pronunciation, [(y)u]; see 6,2 for comments on this pronunciation.

UE10: All exceptions to this rule are cases of silent final ue after g; i.e., ue → ∅ /g__#, e.g., league.

UI10: All exceptions to this rule are pronounced [ɪ], e.g., build, and are classified under Rule UI31 (26,8).

EW10: The secondary vowel ew generally occurs finally and is in complementary distribution with eu, which occurs initially and medially. Because of low frequency, a correspondence for eu was not included in the present rule set. However, it is as follows: eu → [(y)u], e.g., feud, Eugene. Rule EW10 is nearly invariant, with the primary exception being sew and its derivatives.

Block 17: Frequency = 406 (Suffixed and compound three-syllable words; Suffixes)

Unit 1:	Three-syllable compounds	Frequency = 125
Unit 2:	Two-syllable words with suffixes: -er (46), -en (9), -ing (16), -y (14), -s (50), -ed (30)	Frequency = 165
Unit 3:	Three-syllable words with suffixes: -er (47), -en (3), -ing (12), -ed (6), -ly (48)	Frequency = 116

17,1: Three-syllable compounds

This unit marks the first appearance of three-syllable words. The gradual introduction of three-syllable words continues in the first unit of each block until Block 22, where they are thoroughly taught. At this point and hereafter, it is possible to add three-syllable compounds formed by combining previously taught one- and two-syllable words.

17,2: Two-syllable words with suffixes: -er, -en, -ing, -y, -s, -ed

These suffixes have been allowed previously, but for instructional purposes this unit contains those base words sequenced after Block 5. Many of the words have a final silent e in their base form; in their suffixed form, the first (long) vowel in the words could also be described by general primary vowel Rule 13 (18,1).

Words coded with Rules E19 and S31 in Berdiansky et al. (1969) have been included in this unit. These rules were used for coding purposes and need not be explicitly taught, since they are not spelling-to-sound correspondences, but automatic phonological alternations.

-s: Most of the words in this unit ending in -s are (1) not plurals, e.g., hers, (2) plurals with no base form, e.g., suds, (3) plurals with a base form not a noun, e.g., blinds, or (4) plurals with a different meaning from the noun base form, e.g., glasses. In addition, in this unit most exemplars of the ending are pronounced [z].

-ed: Most of the words in this unit ending in -ed are past participles commonly used as adjectives (e.g., mashed), sometimes without a base form, (e.g., ashamed) or with a base form not a verb (e.g., famed).

17,3: Three-syllable words with suffixes: -er, -en, -ing, -ed, -ly

At this point and hereafter, the suffixes from this unit plus -(e)s may be added to any two-syllable word to form a three syllable word.

-ed: In this unit, all examples of -ed are pronounced [əd] and form adjectives.

-ly: There is generally no change in a base word when -ly is added. However, if the base ends in unstressed y (Y17: [ɪ]), the y changes to i (I17: [ɪ] or [ə]) when -ly is added, e.g., happily. The suffixed form -fully (e.g., cheerfully) is sometimes pronounced as one syllable [fl̩].

Block 18: Frequency = 518 (Primary-vowel and single-consonant rules of medium frequency)

Unit 1:	E13 (123), O13 (73), A13 (43), I13 (39), U13 (29)	Frequency = 307
Unit 2:	S20 (95), S21 (57)	Frequency = 152
Unit 3:	A22	Frequency = 29
Unit 4:	O25	Frequency = 30

Block 18 introduces additional primary vowel rules of medium frequency, as well as the remaining correspondences for s. The rules in this block primarily involve multisyllable words.

18,1: E13: e → [ɪ] /__CV, e.g., cedar

O13: o → [o] /__CV, e.g., open

A13: a → [e] /__CV, e.g., baby

I13: i → [ay] /__CV, e.g., final

U13: u → [(y)u] /__CV, e.g., duty

In this unit, general primary vowel Rule 13 is introduced: V → [V̄] /__CV. This is related to general primary vowel Rule 11 (V → [V̄] /__Ce#, Block 5), but with the environment extended to all vowels after a single consonant and to e when not in final position. There are many exceptions (V → [V̄] /__CV̄) to Rule 13, which is one of the least reliable among the present set of correspondences. Some exceptions are covered by general primary vowel Rules 27, 28, and 38 (Block 24).

While there is no adequate solution for handling exceptions to Rule 13 in terms of spelling-to-sound correspondences, an instructional solution can be suggested: teach children to have a set for diversity (cf, Levin & Watson, 1963a, b; Williams, 1968) when encountering vowels in the environment /__CV (where C ≠ r, which requires Vr rules). A possible decoding strategy is as follows:

1. try a long-vowel pronunciation (Rule 13);

2. if (1) does not produce a known word, try a short-vowel pronunciation.

The third step is a more general one which must be used in decoding words of more than one syllable.

3. if (1) and (2) do not produce a known word, try a schwa [ə] pronunciation (a vowel Rule 17 pronunciation).

To develop the above strategy, it is suggested that, after Rule 13 is taught, exceptions be introduced, perhaps as exemplars of an exception rule. Exceptions to general primary vowel Rule 13 can be found among the irregularly-spelled words (Section V), indicated as follows:

V → [V̄] /__CV

or: a → [æ] /__CV

e → [ɛ] /__CV

i → [ɪ] /__CV

o → [ɑ] /__CV

u → [ə] /__CV

E13: Many exemplars of this rule involve the prefix re- (e.g., repay) or the pseudo-prefixes be-, de-, pre-, and re-; the e in these unstressed syllables is often pronounced [ɪ] or [ə].

O13: A few of the exemplars of this rule involve the pseudo-prefix pro-. In unstressed syllables the o may be pronounced [ə].

A13: See Rule A22 (18,3) for a in the environment /__rV.

U13: See 6,2 for comments on the pronunciation of [(y)u]. In some words, U13 in the environment /__r may be pronounced [(y)ə], e.g., jury.

18,2: S20: s → [z] /V__V, e.g., nose

S21: s → [s] / $\left\{\begin{matrix} a \\ ea \\ oo \\ ou \end{matrix}\right\}$ __e, e.g., base, grease, goose, house

Rules S20 and S21 are closely related to general primary vowel Rules 11 and 13 in that they involve the pronunciation of s between two vowels. However, they are especially unstable rules, both having numerous exceptions, in which the opposite correspondence holds.

S20: This rule applies when either V is a primary vowel (including y and silent e) or a secondary vowel. For a few words, Rule S20 applies when the word is used as a verb, but the [s] pronunciation is found when used as a noun or adjective, e.g., use, abuse, close. The following correspondences apply with Rule S20: ea → [ɪ] /__ $\left\{\begin{matrix} son \\ sy \end{matrix}\right\}$ (Rule EA11), e.g., reason, easy; ea → [ɛ] /__sant (Rule EA31), e.g., pleasant.

S21: Rule S21 presents four special environments where Rule S20 does not apply. However, the rule does not work too well in the environment /ea__e, where there are a number of exceptions pronounced with [z] (Rule S20). Rule EA11, ea → [i], and Rule OO11, oo → [u], occur in the environment /__se, e.g., cease, (please), goose.

(Since Rule S21 involves the most common pronunciation of s ([s]), it could be sequenced along with Rules A11, EA11, O11, and OU10. Then when S20 is taught, the environment for S21 could be specified.)

18,3: A22: a → [e], [ɛ], [æ] /__r, e.g., carry

This rule applies in three environments:

1. /__CV, e.g., vary. This is the same environment as for A13, under which the present exemplars could be subsumed. However, they have been placed here because in most dialects their pronunciation is the same as in the environment /__rr. In dialects where pronunciation differs (e.g., Mary [e] and marry [æ] contrast), these words must be coded A13.

2. /__rr, e.g., arrow. Rule A22 is particularly needed for this environment which differs from Rule A21 (9,1).

3. Other: The only examples in this category are scarce and scarcely which can be considered as exceptions to Rule A21 (9,1).

Note should be made here--as with all cases involving a vowel followed by r--of considerable dialect variation.

18,4: O25: o → [o] /__#, e.g., go

This rule is similar to Rules E25 and Y19 (3,1), in that the long-vowel sound corresponds to a letter in final position. However, Rule O25 applies in words of any length.

Block 19: Frequency = 288 (Silent letters)

Unit 1:	Three-syllable words with suffixes: -ment (23), -or (14), -ive (14), -ness (12) -ance/-ant (19)	Frequency = 82
Unit 2:	IE11 (8), I24 + GH10 (60), GH10 (13), H20 (7)	Frequency = 88
Unit 3:	K20 (26), G20 (9), W20 (24)	Frequency = 59
Unit 4:	B20	Frequency = 13
Unit 5:	L20 (21), T20 (19)	Frequency = 40
Unit 6:	U20	Frequency = 6

Block 19 introduces three-syllable words with suffixes, and completes the introduction of single consonant correspondences by presenting "silent letters" (generally indicated by a rule numbered "20"), that is, those grapheme units which do not have a corresponding pronunciation.

19,1: Three-syllable words with suffixes: -ment, -or, -ive, -ness, -ance/-ant.

-ment → [mənt], e.g., agreement

-or → [ər], e.g., inventor

-ive → [ɪv], e.g., attractive

-ness → [nɪs] or [nəs], e.g., eagerness

-ance/-ant → [əns]/[ənt], assistance, assistant

-ment: The ending -ment may occur as a pseudo-suffix, e.g., department

-or: The agent suffixes -or and -er (9,2) have the same meaning and pronunciation.

-ive: Words ending in -d(e) change to -s (pronounced [s]) when adding -ive, e.g., exclude, exclusive (cf, 21,3).

-ness: When adding -ness, final unstressed -y (Y17) changes to -i, also pronounced [ɪ], e.g., happy, happiness.

-ance/-ant: These two suffixes (also, pseudo-suffixes) are grouped together because of their phonological and orthographical similarity, and because they are both often added to the same bases.

19,2: IE11: ie → [ay] /__#, e.g., die

I24 + GH10: igh → [ay], e.g., high

GH10: gh → ∅, e.g., bough

H20: h → ∅ , e.g., hour

This unit begins with two cases of the [ay] pronunciation, Rules IE11 and I24 + GH10. It then covers other examples of silent gh and concludes with silent h.

IE11: This rule applies generally in one-syllable words and in compounds, that is, when stressed. (For unstressed final ie, see Rule IE17; medial ie is covered by Rule IE12. Both of these rules are introduced in Block 26.)

I24 + GH10: In the present set of correspondences, igh is treated as i plus silent gh (see below). However, it could be treated as one grapheme unit: igh → [ay]. There are no exceptions to this correspondence.

GH10: This is the major correspondence for gh. The exceptions are:

gh → [g] /#__, e.g., ghost;

gh → [g] medially and finally in a few words, e.g., spaghetti;

gh → [f] in about ten words, primarily finally, e.g., laugh.

H20: This rule includes a group of exceptions (a), plus two regular, but minor, rules (b and c):

a. h → ∅ /#__, e.g., hour;

b. h → ∅ /__#, e.g., pooh; (One of the few specifiable environments for Rule 0011 is that oo → [u]/__h);

c. h → ∅ /__$V_{\text{unstressed}}$, e.g., graham.

19,3: K20: k → ∅ /#__n, e.g., knee

G20: g → ∅ /$\{{}^{\#__n}_{__n\#}\}$, e.g., gnat, sign

W20: w → ∅ /#__r, e.g., write

K20: This invariant rule is a result of modern English phonotactics, which does not allow the cluster [kn] at the beginning of words.

G20: This invariant rule is also a result of English phonotactics, which does not allow initial or final [gn]. The environment /#__n is the same as for Rule K20 ([g] is the voiced counterpart of [k]). When the environment is /__n#, a preceding i is governed by Rule I22 (introduced in 13,3): i → [ay] /__ gn#, e.g., sign.

W20: This invariant rule is also the result of English phonotactics, which does not allow initial [wr].

19,4: B20: b → ∅ /m__#, e.g., bomb

This invariant rule, like those in 19,3, is a result of modern English phonotactics, which does not allow final [mb].

19,5: L20: l → ∅/ $\begin{pmatrix} o__k \\ a__k \\ a__f \\ a__v \\ a__m \end{pmatrix}$, e.g., yolk, walk, half, salve, palm

T20: t → ∅/$\begin{Bmatrix} s__le \\ s__en \\ f__en \end{Bmatrix}$#, e.g., castle, listen, often

While rules L10 and T20 appear to be invariant, the [l] and the [t] are heard in many words (e.g., calm, often), due to spelling pronunciation.

L20: In addition to Rule L20, Rules 023 and A23 (13,2) apply to the sequences olk and alk, respectively. Most exemplars of the sequence alm are irregular because of the following minor rule: a → [a] /__lm, e.g., palm.

T20: Note the alternation between forms ending in t(e) (→[t]) and those ending with the suffix -en: fast/fasten, haste/hasten, soft/soften.

19,6: U20: u → Ø/#g__V, e.g., guess

The u here is a marker to indicate the [g] pronunciation of g.

Block 20: Frequency = 121 (Consonant digraphs; Double consonants)

Unit 1: Three-syllable words with suffixes: -y (12), -ful (9), -al (7), -able (6), -eth(5), -less (4), -ist (4), -ish (2) Frequency = 49

Unit 2: PH10 (19), CH31 (20) Frequency = 39

Unit 3: TH12 Frequency = 27

Unit 4: CC11 Frequency = 6

Block 20 continues the introduction of three-syllable words and concludes the introduction of double consonants and consonant digraphs.

20,1: Three-syllable words with suffixes: -y, -ful, -al, -able, -eth, -less, -ist, -ish

-y → [ɪ] (Rule Y17, 9,2), e.g., injury

-ful → [fʊl] (Rule U31) or [fəl] (Rule U17), e.g., colorful

-al → [əl], e.g., musical

-able → [əbəl], e.g., suitable

-eth → [ɪθ], e.g., fortieth

-less → [lɪs] or [ləs], e.g., odorless

-ist → [ɪst], e.g., organist

-ish → [ɪš], e.g., yellowish

-eth: The suffix -eth is a variant of the ordinal-number suffix -th (as in fourth) and is added to numbers ending in the vowel y (Y17: [ɪ]) which changes to i [ɪ] (Rule I36, 25,3) before -eth, e.g., twentieth.

20,2: PH10: ph → [f], e.g., phone

CH31: ch → [k], e.g., school

PH10: This is an invariant correspondence.

CH31: While often unpredictable, this correspondence always holds in the following environment: /#__{r, l}, e.g., chrome, chlorine. The correspondence is generally applicable in more common words with the environment /#s__, e.g., school.

20,3: TH12: th → [ð] /__{e, er, ern} #, e.g., breathe, gather, northern

Note the alternation between [θ] (Rule TH11, 3,2) and [ð] in such pairs as wrath/rather, north/northern; this may be an automatic phonological change. Note also the alternation between short vowel plus [θ] and long vowel plus [ð] in such pairs as bath/bathe, breath/breathe; this is a grammatical alternation: nouns versus verbs.

The following correspondences apply with TH12:

o → [ə] /__ther (Rule 031), e.g., brother;

ea → [i] /__the (Rule EA11), e.g., breathe;

ea → [ɛ] /__ther (Rule EA31), e.g., weather.

20,4: CC11: cc → [ks] /__e, e.g., success.

This rule was not used in Berdiansky et al. (1969), where words were coded C12, C11. (If Rule CC12 is not taught in 11,5, this would be an appropriate place to introduce it.)

Block 21: Frequency = 177 (Palatalizations)

Unit 1:	Three-syllable words with prefixes: un- (19), re- (6), dis- (5), in- (4), mis- (3)	Frequency = 37
Unit 2:	-tion	Frequency = 81
Unit 3:	-sion → [ʃən] (20), -sion → [ʒən] (12)	Frequency = 32
Unit 4:	-ture	Frequency = 27

This block concludes the introduction of three-syllable words with affixes. For the first time, selected palatalizations are introduced, in both two- and three-syllable words. (The remaining minor palatalizations are listed in Section VII.) Palatalizations are certain spelling-to-sound correspondences which result in the sounds [ʃ], [ʒ], [ʧ], and [ʤ] and are discussed in greater detail in Cronnell (1971a, pp. 32-34). Words with palatalizations were coded "E" in Berdiansky et al. (1969). It is suggested that palatalizations

be taught by contrasting base and suffixed forms, e.g., promote-promotion, permit-permission, decide-decision. This will promote learning of English phonology, cf, MacDonald (1969), Chomsky (1970).

21,1: Three-syllable words with prefixes: un-, re-, dis-, in-, mis-

un- → [ən], e.g., unbroken

re- → [ri] or [rɪ], e.g., reopen

dis- → [dɪs], e.g., disappear

in- → [ɪn], e.g., inhuman

mis- → [mɪs], e.g., misbehave

21,2: -tion → [šən], e.g., vacation

This is the most common ending involving palatalization in the present lexicon. The suffix is generally only -ion (cf, -ssion and -sion, 21,3), but it is the t which is involved in palatalization, e.g., attract, attraction. (In some words -tion is a pseudo-suffix, e.g., nation.)

As when adding other suffixes beginning with a vowel, the final silent e on a base word is dropped, e.g., translate, translation. For certain base forms, the ending is -ation [éšən], e.g., tempt, temptation. Note that whenever -(t)ion is added to a word, stress is on the syllable preceding the suffix, e.g., dónate, donátion.

In the environment /s__, -tion is pronounced [čən], e.g., suggestion. This is an automatic phonological alternation.

A number of changes may occur in the base when -(t)ion is added. Those found in the present unit are listed below.

A. A long vowel in the base word becomes a short vowel in the suffixed word, sometimes with attendant consonant changes.

1. ai → [e] → e [ɛ] + tion, e.g., detain, detention

2. eive [iv] → ep [ɛp] + tion, e.g., receive, reception

3. ibe [ayb] → ip [ɪp] + tion, e.g., describe, description

4. u [u] → u [ə] + tion, e.g., reduce, reduction (The pronunciation of c changes from [s] to [k]--Rule C11 to C12--because of the change in environment.)

B. Other changes

1. d → t /__ion, e.g., intend, intention

2. oi/oy [oy] → u [ə] + ction, e.g., destroy, destruction

21,3: -sion → [šən], e.g., mission, mansion

-sion → [žən], e.g., occasion

The ending -sion has two pronunciations, depending on environment: [šən] and [žən] (cf, the contrast of [s] and [z] in Rules S10 and S20). While -sion is sometimes a pseudo-suffix, e.g., mansion, it generally results from the suffix -ion, e.g., confession (cf, -tion, 21,2). All words in this unit are stressed on the syllable preceding -(s)sion.

All occurences of -ssion are pronounced [šən]. This ending comes from three sources in the present lexicon:

1. base word ending in ss + ion, e.g., discuss, discussion;

2. base word ending in t + ion → ssion, e.g., permit, permission;

3. base word ending in ede [id] + ion → ession [ɛ́šən], e.g., procede, procession (cf, -ive, 19,1).

The ending -sion is pronounced [šən] in the environment /C__, where the consonant is n t r, e.g., tension. The pronunciation [žən] for -sion occurs in the environment /V__, e.g., occasion, and in the environment /r__, e.g., excursion. In addition, this pronunciation results from suffixation:

1. Vde [V̄d] + ion → Vsion [V̄zən], e.g., conclude, conclusion;

2. ide [ayd] + ion → ision [ížən], e.g., divide, division

21,4: -ture → [čər], e.g., picture

In the present lexicon, this is the second most frequent ending involving palatalization. Most generally, -ture is a pseudo-suffix, e.g., future, although the regular affix -(t)ure is occasionally found, e.g., moisture, mixture. Rule EA11, ea → [i], occurs in the environment /__ture.

Block 22: Frequency = 334 (Non-affixed three-syllable words)

Unit 1: Stress pattern 3B — Frequency = 93

Unit 2: Stress pattern 3A — Frequency = 130

Unit 3: Stress Pattern 3C Frequency = 91

Unit 4: Stress pattern 3D Frequency = 20

Block 22 introduces nonaffixed three-syllable words. Since no new correspondences are used and since the concept of three syllables has been employed previously (17,1; 17,3; 19,1; 20,1; Block 21), what is primarily introduced in this block is new stress patterns. These are important because of their effect on the pronunciation of vowels: vowels in unstressed syllables are pronounced using general primary vowel Rule 17 ([ə], or in the case of y, Rule Y17: [ɪ]), while vowels in stressed syllables are pronounced employing other correspondences. For describing stress, the following symbols are used:

ˊ: primary stress: full pronunciation of the vowel;

ˋ: secondary stress: full pronunciation of the vowel, but with less prominence than for primary stress;

-: unstressed: [ə] (or [ɪ]) as the pronunciation of a, e, i, o, u; [ɪ] as the pronunciation of y.

The difference between primary and secondary stressed vowels is probably not of importance for teaching, so long as they receive their full pronunciation. The main concern is that unstressed vowels should not receive a full pronunciation, but should be pronounced [ə] (or [ɪ] for unstressed y).

Note should be made here that the precise pronunciation of unstressed vowels varies from dialect to dialect, from speaker to speaker, and from word to word. While [ə] is the most common unstressed-vowel sound, [ɪ] and other varieties of vowels may be used. In some words, the pronunciation of unstressed u varies between [ə] and [(y)u], often being pronounced [yə], e.g., formula. With stress pattern 3C, the first vowel in some words may have its full pronunciation, e.g., antenna.

Four stress patterns have been found which are applicable to the three-syllable words in the present lexicon:

22,2: Stress pattern 3A: ˊ--, e.g., carnival

22,1: Stress pattern 3B: ˊ-ˋ, e.g., hurricane

22,3: Stress pattern 3C: -ˊ-, e.g., umbrella

22,4: Stress pattern 3D: ˋ-ˊ, e.g., kangaroo

Stress patterns 3A and 3B are closely related, the difference being that in 3A the final vowel is unstressed, while in 3B the final vowel

has its full form. It may be preferable to consider these patterns as subcategories of one overriding pattern. (Certain words belong to either stress pattern 3A or 3B, depending on form class; e.g., estimate as a verb is 3B [ɛ́stəmə̀t], as a noun 3A [ɛ́stəmɪt].) In sequencing three-syllable stress patterns, 3B has been placed before 3A because both the first and last vowels of 3B can be pronounced using major environmentally governed correspondences. It is felt that the two unstressed vowels of 3A will be more difficult than the one of 3B. Otherwise, the criterion for sequencing stress patterns is frequency. Within each unit, stress patterns are ordered on the basis of the spelling-to-sound correspondences for the last vowel.

Fourth Year: Frequency = 1148

(Low-frequency primary and secondary vowels; Four-syllable words; Affixes; Four-syllable stress patterns)

REVIEW BLOCK

It is assumed that Fourth Year will begin with review. However, no specific suggestions are made in this report. Since there are over 3000 exemplars given for Third Year, there should be sufficient material for review.

Block 23: Frequency = 153 (Specific primary vowel rules)

Unit 1: A29 (29), A24 (44) — Frequency = 73

Unit 2: I35 (22), I25 (27) — Frequency = 49

Unit 3: Y11 (8), Y13 (6), Y15 (7), Y16 (10) — Frequency = 31

Blocks 23, 24, and 25 introduce the remaining, minor correspondences for primary vowels (with the exception of general primary vowel Rule 32 in 27,6). In general, specific vowel rules are introduced in Block 23, while Blocks 24 and 25 cover rules generalizable across all vowels (general primary vowel rules).

23,1: A29: a → [e] /__{nge, ste#}, e.g., danger, paste

A24: a → [ɑ] /{w, qu}__, e.g., wad, squat

This unit includes special rules for the letter a.

A29: This is a limited extension of Rule A11. Rule A29 applies even if the e is lost from the environment when suffixes are added, e.g., haste, hasty.

A24: This rule applies only when the following consonant sound is not a velar (i.e., is not [k, g, ŋ]); thus it does apply before k, ng, x, c pronounced [k], or g pronounced [g]. It also does not apply before r, where Rule A25 (9,3) is used. There is a considerable amount of dialect and idiolect variation among exemplars of this rule, with [ɔ] often being used.

23,2: I35: i → [ɪ], e.g., police

I25: i → [y] /C__V$_{unstressed}$, e.g., junior

This unit includes special rules for the letter i.

I35: This exception rule covers words which were coded as irregular in Berdiansky et al. (1969). It is unpredictable except in the environment /__#, where it always holds, e.g., ski (with the exception of I and hi).

I25: In this rule, i functions unpredictably as a consonant. The most common environment is /{l, n}__, e.g., million, onion.

23,3: Y11: y → [ay] /__Ce#, e.g., type

Y13: y → [ay] /__CV, e.g., tyrant

Y15: y → [ɪ] /__C(C)#, e.g., gym, myth

Y16: y → [ɪ] /__CC..., e.g., system

General primary vowel Rules 11-16 are applicable to y, where the pronunciation is the same as for i. Because of low frequency, the y rules have been postponed until this unit.

Block 24: Frequency = 224 (Four-syllable words; Rules for exceptions to general primary vowel Rule 13)

Unit 1:	Four-syllable compounds (11); Four-syllable compounds with suffixes: -ing (7), -y (1), -er (6), -or (8), -ed (2), -ly (14)	Frequency = 50
Unit 2:	E38 (38), I38 (22), A38 (21), O38 (8)	Frequency = 89
Unit 3:	A28 (19), I28 (17), Y28 (1), O28 (21), E28 (9)	Frequency = 67
Unit 4:	General primary vowel Rule 27	Frequency = 18

Block 24 marks the introduction of four-syllable words. In addition, rules are introduced which provide for exceptions to general primary vowel Rule 13; i.e., rules which provide for V→ [V̆] /__CV (cf, 18,1).

24,1: Four-syllable compounds

Four-syllable words with suffixes: -ing, -y, -er, -or, -ed, -ly

This unit begins the introduction of four-syllable words, which continues in the first unit of each block until Block 27, where they are thoroughly introduced. The sequence and method of

introducing four-syllable words is similar to that used for three-syllable words in Third Year. (See 17,2 and 17,3 for comments on suffixes.)

24,2: E38: e → [ɛ] /__{x v}V, e.g., Texas, level

I38: i → [ɪ] /__vV, e.g., river

A38: a → [æ] /__{x(1) v}V, e.g., axis, axle, cavern

O38: o → [ɑ] /__{x v}V, e.g., oxen, novel

General primary vowel exception Rule 38 is as follows: V → [V̆] /__{x v}(1)V; it does not apply to u or y for any words in the present lexicon, nor are there exemplars of i in the environment /__xV. The environment including l appears only in one word, axle. The rule always works for x, which can never be doubled and which functions as a consonant cluster (the CC in general primary vowel Rule 16, which always applies to primary vowels before x). For vowels before v, there is considerable variation between Rules 13 and 38 (cf, evil, devil), and it may be advisable to eliminate this rule for v. (Exemplars with v could be taught as exceptions to Rule 13; see 18,1.)

24,3: A28: a → [æ] /__C{ic, id, ish, it}, e.g., magic, rapid, radish, habit

I28: i → [ɪ] /__C{ic, id, ish, it}, e.g., clinic, timid, finish, limit

Y28: y → [ɪ] /__Cic, e.g., physic

O28: o → [ɑ] /__C{ic, id, ish, it}, e.g., phonics, solid, abolish, profit

E28: e → [ɛ] /__C{ic, ish, it}, e.g., relic, cherish, credit

General Primary vowel Rule 28 is as follows: V → [V̆] /__C{ic, id, ish, it}.

This rule does not generally apply to u. The endings id, ish, and it are not suffixes, but ic may be and in such cases the base and affixed forms should be contrasted in order to promote learning of English

phonology (cf, MacDonald, 1969; Chomsky, 1970). Stress is always on the syllable before the ending, even when the base form is stressed otherwise (e.g., áthlete, athlétic).

An alternative approach to the above sequence is teaching each letter in each environment, i.e.:

V → [V̆] /__Cic,

V → [V̆] /__Cit,

V → [V̆] /__Cish,

V → [V̆] /__Cid.

Y28: The only lexicon exemplars of Rule Y28 are in the environment /__Cic.

E28: There are no lexicon exemplars of Rule E28 in the environment /__Cid.

24,4: General primary vowel Rule 27

General primary vowel Rule 27 is as follows: V → [V̆]__City, e.g., humanity, ability. Rule 27 could be included in general primary vowel Rule 28 (24,3) but is not, however, since its occurrence involves four-syllable words. In addition, most exemplars of Rule 28 are cases of base plus -ity (→ [əṭi]), and it is probably appropriate to teach this rule in terms of contrast between the base and suffixed forms to promote learning of English phonology (cf, MacDonald, 1969; Chomsky, 1970). Note that the last vowel in most base forms is unstressed ([ə] or [ɪ]), changing to [V̆] when the suffix is added. As with Rule 28, the syllable before the ending (-ity) is stressed, e.g., moral [mórəl], mórality [morǽləṭi]. Because of the limited number of exemplars, this rule is not taught by individual letters, but is generalized across letters.

Block 25: Frequency = 248 (Remaining general primary vowel rules)

Unit 1:	Four-syllable words with -tion	Frequency = 62
Unit 2:	I26 (30), Y26 (2), U26 (12), E26 (15), O26 (4), A26 (2)	Frequency = 65
Unit 3:	I36 (38), Y36 (2)	Frequency = 40
Unit 4:	A12 (18), I12 (9), Y12 (2), O12 (2), U12 (2)	Frequency = 33
Unit 5:	E14 (20), 114 (9), Y14 (4), A14 (8), O14 (4), U14 (3)	Frequency = 48

25,1 continues the introduction of four-syllable words. Units 2-5 of Block 25 mainly introduce new rules for the long pronunciation of primary vowels. Units 2 and 3 are concerned with the pronunciation of a vowel followed by a vowel, while units 4 and 5 are extensions of the long-vowel rules.

25,1: Four-syllable words with -tion → [ʃən]

Comments applicable to -tion are found in 21,2. It should be noted that primary stress always falls on the syllable before -tion; however, for four-syllable words there is secondary stress on the first syllable. Thus the stress pattern is ˋ-ˊ-, with unstressed vowels in the second and last syllables. These stress considerations may cause sizable pronunciation differences between base and suffixed forms (e.g., console [kənsó͡l], consolation [kànsəlé͡ʃən]), which should be contrasted when teaching palatalizations.

Within this unit there are two cases of exceptions to general primary vowel Rule 13:

a. the ending -ition pronounced [ɪ͡ʃən];

b. the first vowel having a long sound in the base, but a short sound in the suffixed form, e.g., recite, recitation.

25,2: I26: i → [ay] /__-V, e.g., lion

Y26: y → [ay] /__-V, e.g., hyena

U26: u → [(y)u] /__-V, e.g., duet

E26: e → [i] /__-V, e.g., create

O26: o → [o] /__-V, e.g., poet

A26: a → [e] /__-V, e.g., mosaic

This unit introduces general primary vowel Rule 26: V → [V̆] /__-V. The hyphen indicates syllable division, to differentiate two separate vowels from a secondary vowel. In many cases where this rule applies, there is no possibility of confusion with secondary vowels; e.g., the sequence io is never a secondary vowel and must always be treated as two primary vowels, as in riot. However, in some cases a vowel sequence may be either a secondary vowel or two primary vowels, cf, the ea in sea [i] and area [iə]. In such cases, there is no way to determine which is the correct interpretation except by trial and error.

The vowel following a Rule 26, in most words, is unstressed [ə], e.g., riot [rá͡yət], area [é͡riə].

I26: This rule should be compared with Rule I25, where the i is pronounced [y], e.g., million.

Y26: This rule is another case of the applicability of general primary vowel rules to y, which has the same pronunciation as i.

25,3: I36: i → [i] /__-V, e.g., Indian

Y36: y → [i] /__-V, e.g., embryo

These exception rules have the same environment as Rules I26 and Y26, but a different pronunciation, [i].

I36: Cf, Rule I35 (23,2) which has the same pronunciation.

25,4: A12: a → [e] /__C{r l}e#, e.g., acre, table

I12: i → [ay] /__Cle#, e.g., title

Y12: y → [ay] /__Cle#, e.g., cycle

O12: o → [o] /__C{r l}e#, e.g., ogre, noble

U12: u → [(y)u] /__Cle#, e.g., bugle

This unit introduces general primary vowel Rule 12: V → [$\bar{V}$] /__C{r l}e#, which is an extension of Rule 11 (Block 6), with r or l between the consonant and the final e. The environment /__Cre# occurs only if the consonant is g or c, when er would indicate the G11 or C11 pronunciations rather than the desired G12 or C12. The only examples of this in the present lexicon are acre and ogre, where re is pronounced [ər] and is thus irregularly-spelled (see Section V). General primary vowel Rule 12 apparently has no exemplars with e.

25,5: E14: e → [i] /__C{r l}V, e.g., secret, reflect

I14: i → [ay] /__C{r l}V, e.g., library, biplane

Y14: y → [ay] /__C{r l}V, e.g., hydrant, cyclone

A14: a → [e] /__CrV, e.g., April

O14: o → [o] /__C{r l}V, e.g., okra, only

U14: u → [(y)u] /__C{r l}V, e.g., lubricate, duplicate

This unit introduces general primary vowel Rule 14: V → [$\bar{V}$] /__C{r l}V, which is an extension of Rule 13 (18,1) and is similar to Rule 12 (23,4).

E14: In unstressed syllables, this may be pronounced [ɪ] or [ə].

A14: There are no lexicon exemplars of this rule in the environment /__C1V.

Block 26: Frequency = 316 (Low-frequency secondary vowel rules)

Unit 1:	Four-syllable words with suffixes: -able (19), -ment (5), -al (8), -ness (2), -ary (2), -ist (1)	Frequency = 37
Unit 2:	IE17 (13), EY17 (23)	Frequency = 36
Unit 3:	AI17	Frequency = 10
Unit 4:	EA33	Frequency = 18
Unit 5:	IE12 (39), EI10 (15)	Frequency = 54
Unit 6:	EY10 (9), EI20 (19)	Frequency = 28
Unit 7:	-ous (39), OU31 (27), OU35 (29), OU33 (19), OU34 (11)	Frequency = 125
Unit 8:	UI31	Frequency = 8

This block continues the introduction of four-syllable words and concludes the teaching of secondary vowel rules.

26,1: Four-syllable words with suffixes: -able, -ment, -al, -ness, -ary, -ist

See 19,1 and 20,1 for discussion of these suffixes.

26,2: IE17: ie → [ɪ] /__# in unstressed syllables, e.g., hippie

EY17: ey → [ɪ] /__# in unstressed syllables, e.g., honey

Both rules in this unit occur in unstressed syllables in word-final position. Both are pronounced the same: [ɪ] (or [ɪ], particularly in connected speech). Both, but especially IE17, are common in proper names (see Section VI).

IE17: For stressed final ie see Rule IE11 (19,2). Medial ie is covered by Rule IE12 (26,5).

EY17: Stressed ey is covered by Rule EY10 (26,6).

26,3: AI17: ai → [ə] in unstressed syllables, e.g., villain

All exemplars of this rule are in the environment /__n#. As with general primary vowel Rule 17, pronunciation varies between

[ə] and [ɪ]. In many cases, a vowel is not pronounced, leaving a syllabic [n̩], e.g., mountain [máwntn̩].

26,4: EA33: ea → [ə] /__r, e.g., earn

This is an exception rule, in that Rules EA11 and EA31 (12,2) are regularly found before r, e.g., hear, bear. Rule EA33 groups together all cases of ear pronounced [ər], e.g., heard

26,5: IE12: ie → [ı] /C__C, e.g., field

EI10: ei → [ı], e.g., seize

Both rules have the same pronunciation, [ı], and occur only medially.

IE12: Final ie is covered by Rules IE11 (19,2) and IE17 (26,2). In addition, the sequence ie may be a combination of i and e, e.g., diet (see Rule I26 in 25,2).

EI10: The other pronunciation of ei is covered by Rule EI20 (26,6) with which EI10 could be contrasted.

26,6: EY10: ey → [e], e.g., they

EI20: ei → [e]/__{gh, gn, n}, e.g., weigh, reign, vein

These two rules have the same pronunciation, and are in complementary distribution, EY10 occurring finally and EI20 occurring initially and medially.

EY10: This rule applies in stressed syllables, primarily in one-syllable words. Unstressed ey is covered by Rule EY17 (26,2). The only exceptions to this rule are key and eye and their derivatives.

EI20: For words with Rule EI20 in the environment /__gh, the gh is always silent (GH10, in 19,2). The environment /__n does not necessarily specify this rule, cf, protein, EI10 (26,5).

26,7: -ous → [əs], e.g., dangerous

OU31: ou → [ə], e.g., touch

OU35: ou → [o], e.g., though

OU33: ou → [u], e.g., soup

OU34: ou → [ɔ] /__ght, e.g., fought

This unit introduces the many remaining pronunciations of ou, the major one, OU10, having already been taught (16,2). Rule OU31

governs the pronunciation of the -ous ending, which is presented first because of its high frequency and consistency. Burmeister (1968) found OU31 to be the most frequent rule for ou in a 20,000 word corpus, due primarily to this ending.

-ous: The ending -ous is both a suffix and a pseudo-suffix, e.g., joyous, jealous.

OU31: The sequence our is pronounced [ər], e.g., courage.

OU35: All but one of the exemplars of this exception rule are in the environments /__gh, r, l.

OU33: The pronunciation [yu] seems not to occur for this rule, except variably in coupon.

OU34: All exemplars of this exception rule occur only in the environment /__ght. The gh is silent (Rule GH10) and ought could be taught as a sequence pronounced [ɔt]. In some dialects [a] is the pronunciation for this rule.

26,8: UI31: ui →[ɪ], e.g., built

All exceptions to Rule UI10 (16,6) are covered by this rule. The words are either build and its derivatives, or cases of unstressed ui, e.g., biscuit.

Block 27: Frequency = 207 (Four-syllable words; General primary vowel Rule 32)

Unit 1:	Four-syllable words with prefixes: un- (8), in- (6), dis- (3), mis- (2)	Frequency = 19
Unit 2:	Stress pattern 4A (61), Stress pattern 4B (10)	Frequency = 71
Unit 3:	Stress pattern 4C	Frequency = 23
Unit 4:	Stress pattern 4D	Frequency = 14
Unit 5:	Other four-syllable words	Frequency = 7
Unit 6:	E32 (51), O32 (13), A32 (6), I32 (3)	Frequency = 73

Block 27 concludes the introduction of four-syllable words and introduces general primary vowel Rule 32.

27,1: Four-syllable words with prefixes: un-, in-, dis-, mis-,

See 21,1 for discussion of these prefixes.

27,2; 27,3; 27,4; 27,5: Four-syllable words

These units introduce nonaffixed four-syllable words. Since no new correspondences are used and since the concept of four syllables has been employed previously (24,1; 24,4; 25,1; 26,1; 27,1), what is primarily introduced in this block is new stress patterns. See Block 22 for discussion of stress, stress symbols, and unstressed vowels and their pronunciation.

Four stress patterns have been identified which are applicable to the four-syllable words in the present lexicon:

27,2: Stress pattern 4A: -ˈ--, e.g., asparagus

Stress pattern 4B: -ˈ-ˋ, e.g., abbreviate

Stress pattern 4A and 4B are closely related, the difference being that in 4A the final vowel is unstressed, while in 4B the final vowel has its full form. It may be preferable to consider these patterns as subclasses of one overriding pattern.

27,3: Stress pattern 4C: ˋ-ˈ-, e.g., tonsilitis

27,4: Stress pattern 4D: ˈ-ˋ-, e.g., alligator

27,5: Other four-syllable words

This is a small set of words with miscellaneous stress patterns:

ˈ---, e.g., accuracy

ˈ--ˋ, e.g., meteorite

ˋ--ˈ, e.g., marionette

27,6: E32: e → Ø, e.g., difference

O32: o → Ø, e.g., history

A32: a → Ø, e.g., separate (Aj)

I32: i → Ø, e.g., aspirin

There are a number of words where a graphemic medial vowel is not generally pronounced (V → Ø), although an alternate pronunciation with the vowel (unstressed, pronounced [ə]) is usually possible, if over-precise. These unpronounced vowels are coded as general primary vowel Rule 32. Very often they are in the environment /__r, e.g., every. In some instances, alternate pronunciations [Ø] and [ə] occur depending on form class (cf deliberate, elaborate, and separate as adjectives versus verbs). In such cases, Rule 32 applies to the

adjective forms and Rule 17 to the verb forms.

This unit includes potential three-syllable words reduced to two syllables and potential four-syllable words reduced to three syllables. There are no exemplars of general primary vowel Rule 32 for u or y.

E32: Many of the exemplars of Rule E32 have unpronounced e in the ending -ery (→ [ri]), e.g., scenery. Very often this results when -y is added to a base ending in -er, silver [sílvər], silvery [sílvri].

Section III

CRITERIA FOR WITHIN-RULE SEQUENCING

The general criteria for within-rule sequencing are described in Section I of this report. The present section details the specific criteria used in the word lists in Section IV, where exemplars of each rule are divided into a number of sections. Each section is indicated by a number or a letter or by a combination of number and letter, which ranks the exemplars (lowest number and first letter with highest priority) for predicted ease of presentation and learning of a rule.

In this report, several general criteria have been most commonly used for ranking exemplars:

1) Position of grapheme unit: initial, final, medial, in that order of difficulty;

2) Number of syllables: more syllables mean greater difficulty;

3) Frequency: a more frequent environment offers more exemplars for presentation;

4) Where applicable, rule exemplars within a section can be further subgrouped in the following order of descending preference:

a. exemplars containing single consonants,
b. exemplars containing double consonants,
c. exemplars containing digraphs (e.g., sh, ch, etc.),
d. exemplars containing consonant clusters;

5) Where applicable, rule exemplars within a section can also be further subgrouped in the following order of descending preference:

a. exemplars containing short vowels,
b. exemplars containing long vowels,
c. exemplars containing consonant clusters;

When there is no criterion for division, or when the number of exemplars is low, words have been alphabetized. Within each section, words are also alphabetized.

In addition, three specific sets of criteria have been used with rules throughout the sequence: "general position criteria," "special position criteria," and "R criteria."

GENERAL POSITION CRITERIA

The "general position criteria" are given below, with the underlined C or V as the grapheme unit being taught.

Consonants (one-syllable words):

1a = CV	2a = VC	3a = CVCC	4a = CCV(C)	5a = CCV(C)
1b = CVC	2a = CVC	3b = CCVC	4b = (C)VCC	5b = (C)VCC
			4c = CCVCC	5c = CCVCC
			4d = CCVCC	5d = CCVCC
				5e = CCCV.. or ..VCCC

Vowels (one-syllable words):

1a = V	2a = CV	3a = VCC	4a = CVCC	5a = CCVCC
1b = VC	2b = CVC	3b = CCV	4b = CCVC	5b = CCCV.. or ..VCCC

Consonants and vowels (multisyllable words):

6a = two-syllable compounds
6b = two-syllable words formed by adding affixes to one-syllable words

7 = two-syllable words
- a = grapheme unit initial
- b = grapheme unit final
- c = grapheme unit medial

8a = three-syllable compounds
8b = three-syllable words formed by adding affixes to two-syllable words

9 = three-syllable words
- a = grapheme unit initial
- b = grapheme unit final
- c = grampheme unit medial

10a = four-syllable compounds
10b = four-syllable words formed by adding affixes to three-syllable words

When the "general position criteria" are used, final silent e is treated as a C unless otherwise noted, since the criteria do not provide for two vowels in a word. When all words involved have a final silent e (e.g., in Block 6), it is excluded, since it does not differentiate words.

In the "general position criteria" and in other within-rule sequencing criteria, double consonants and consonant digraphs are counted as single C's; e.g., mat, mass, and mash are all considered to be CVC words. Also, secondary vowels are counted single V's; e.g., bet, beat, and beet are considered to be CVC words.

SPECIAL POSITION CRITERIA

The "special position criteria" are a modification of the "general position criteria" for vowels, with criteria collapsed, used in a few cases:

i = #(C)V...
ii = #(C)CCV...
iii = two-syllable compounds;
two-syllable words formed by adding affixes to one-syllable words
iv = other two-syllable words

R CRITERIA

The "R criteria" are used in addition to other criteria for vowels before r, because of the greater difficulty of Vr sequences:

i = vowel not in the environment /__r
ii = vowel in the environment /__r

Criteria for Within-Rule Sequencing of First- and Second-Year Word Lists

Blocks 1-4		general position criteria[1]
Block 5		
5,1		alphabetical
5,5		general position criteria
Block 6		general position criteria, with final silent e excluded (e.g., name = CVC); R criteria
Block 7		
7,1		general position criteria, with final silent e excluded (e.g., face = CVC)
Block 8		
8,1		1 = vowel Rule 11 at end of compound 2 = vowel Rule 11 in first part of compound 3 = other
8,2	A16, I16 U16, E16	1 = /#__ 2 = other
	O16	1 = con- 2 = other

[1] In 1,1 these criteria were modified because of the introduction of five rules at once:
1 = VC
2 = CVC
3 = (C)VCC

Block 9

9,1		general position criteria, with r as part of the vowel (e.g., or = V)
9,2	E21	1 = base + er: a = $\{^{CC}_{VC}\}$ + er; b = C + Cer
		2 = unstressed final er: a = $\left\{^{VCer}_{C_1C_2er}{}^{2}\right\}$; b = C_1C_1er
		3 = #Cer
		4 = secondary stressed er(C)#
	U21,I21, A21	1 = compounds 2 = other
	O21	1 = compounds 2 = er# 3 = other
9,3		general position criteria, with r as part of the vowel (e.g., word = CVC)

Block 10

10,1	I17	1 = ish# 2 = iC# 3 = iCC#
	U17	1 = us# 2 = other
	E17	1 = base + ness/less: a = -ness; b = -less 2 = base + en/ed: a = -en; b = -ed 3 = other ess, en, ed: a = ess; b = en; c = ed 4 = et# 5 = el# 6 = other
	A17	1 = -man 2 = a# 3 = al# 4 = other (not /__r) 5 = ar (C)#: a = ar#; b = ar(C)#
	O17	1 = on# 2 = other (not /__r) 3 = or(C)#
10,2	Y17	1 = base + ly 2 = base + y: a = $\{^{CC}_{VC}\}$ + y; b = C + Cy 3 = numbers 4 = other: a = C_1C_1y; b = $\left\{^{VC}_{C_1C_1}\right\}$ y
	LE22	1 = C_1C_1 le 2 = $\left\{^{VC}_{C_1C_2}\right\}$ le
10,3		alphabetical
10,4	I16	1 = in- 2 = dis- 3 = other
	U16	1 = un + base 2 = other
	A16, O16, E21, O21, EE10	alphabetical

10,5	A17	1 = a + base
		2 = #a
		3 = other

	E17	1 = ex-
		2 = #e
		3 = other

	O17	1 = con- 2 = com- and col- 3 = pro- 4 = other (not /__r) 5 = #Cor
	U17, I17	alphabetical

Block 11

11,1		1 = base + ing 2 = -ing# 3 = other
11,2		general position criteria

[2] The notation C_1C_2 indicates two different consonant letters, while C_1C_1 indicates two occurrences of the same letter.

11,3		general position criteria
11,4		general position criteria
11,5	GG10	1 = one-syllable words; compounds 2 = other two-syllable words
	CC10	alphabetical
11,6		1 = one-syllable words 2 = nger# 3 = other two-syllable words

Block 12

12,1		general position criteria
12,2	EA11[3]	1 = environments applying to EA11, but not to EA31: a = /__#; b = /__l; c = /__m; d = /__ch; e = /__p; f = other 2 = environments applying primarily to EA11, but also to EA31 (and/or EA33 and/or EA40): a = /__r; b = /__t; c = /__k; d = /__n; e = /__st; 3 = environments applying fairly equally to EA11 and EA31: a = /__d; b = /__f; c = /__v; d = /__th; plus special position criteria
	EA31	1 = /__lth (environment applying to EA31, but not to EA11) 3 = environments applying fairly equally to EA31 and EA11: a = /__d; b = /__r; c = other; plus special position criteria
12,3	0011	1 = environments applying to 0011, but not to 0012: a = /__#; b = /__n; c = /__m; d = /__p; e = /__th; f = /__st;
		2 = /__l (environment applying primarily to 0011, but also to 0012) 3 = environments applying fairly equally to 0011 and 0012: a = /__t; b= /__d; c = /__f; d = /__r; e = /__k; plus special position criteria
	0012	2 = /__k (environment applying primarily to 0012, but also to 0011) 3 = environments applying fairly equally to 0012 and 0011: a = /__d; b= /__t; c = /__l; d = /__f; e = /__p; plus special position criteria
12,4		general position criteria

Block 13

13,1	031	general position criteria
	U31	1 = one-syllable words 2 = base + ful 3 = other two-syllable words
13,2	A23	1 = /__ll 2 = /__lt 3 = /__ld plus special position criteria
	023	1 = /__ll 2 = /__ld 3 = /__lt plus special position criteria
13,3	122	1 = /__nd 2 = /__ld plus special position criteria
	024[4]	1 = environments applying to 024, but not to any other rules for o: a = /__ng; b = /__g; c = /__ff; d = /__ft; e = /__nk; 3 = environments applying to 024 and also to other rules for o: a = /__ss; b = /__st; c = /__th; plus special position criteria

[3] In both 12,2 and 12,3 (and similarly in 13,3; Rule 024) there are two rules for two different pronunciations of the same secondary vowel, and the following criteria are used:
1 = environments applying to the rule under consideration, but not the other rule;
2 = environments applying primarily to the rule under consideration, but also to the other rule;
3 = environments applying fairly equally to both rules.

[4] See footnote 3.

Block 14

14,1	1 = dge (#): a = one-syllable words; b = compounds; c = two-syllable words; 2 = nCe#: a = nge#; b = nce#; c = nse#; i = one-syllable words; ii = two-syllable words 3 = lCe 4 = other: a = one-syllable words; b = two-syllable words
14,2	1 = rse# 2 = rve# 3 = rge#
14,3	1 = nce# 2 = Vge# 3 = Vce# 4 = other VCe# 5 = other VCCe#

Criteria for Within-Rule
Sequencing of Third-Year Word List

Block 15

15,1		alphabetical
15,2		second-year sequence, alphabetical within units

Block 16

16,1		general position criteria; R criteria
16,2		general position criteria; R criteria
16,3	OE10	1 = one-syllable words 2 = two-syllable words
	OA10	general position criteria; R criteria
16,4		general position criteria
16,5		general position criteria
16,6	UE10	general position criteria
	UI10	1 = one-syllable words 2 = compounds 3 = two-syllable words
	EW10	general position criteria

Block 17

17,1		alphabetical
17,2	-er	1 = V11[5], C# → er 2 = other C# → er (C ≠ l) 3 = l# (LE22) → er 4 = y [ay] → i [ay] → er
	-en	alphabetical
	-ing	1 = V11, C# → ing 2 = other
	-y	1 = V11, C# → y 2 = other

[5] V11 = general primary vowel Rule 11.

	-s	1 = s → [z], [s]: a = one-syllable words; b = compounds; c = two-syllable words; d = f (singular) → v (plural) 2 = (e)s → [əz] 3 = y → i + es
	-ed	1 = C→(C)ed: a = [d], [t]: i = one-syllable words, ii = two-syllable words; b = [əd] 2 = VC→Ved: a= [d], [t]: i = one-syllable words, ii = two-syllable words; b = [əd] 3 = y → i + ed
17,3	-er	1 = two-syllable base + er: a = no change in base; b = ∅ 2 = compounds: a = no change in base word; b = ∅
	-en, -ing, -ed	alphabetical
	-ly	1 = no change in base 2 = y [i] → i [ə] + ly 3 = ful + ly

Block 18

18,1	E13	1 = re- 2 = be- 3 = de- 4 = e- 5 = pre- 6 = other two-syllable words 7 = three-syllable words
	O13	1 = o 2 = pro- 3 = Co- 4 = CCo- 5 = three-syllable words
	A13	1 = two-syllable words 2 = three-syllable words
	I13	1 = i- 2 = Ci- 3 = CCi- 4 = three-syllable words
	U13	1 = (C)u- 2 = CCu- 3 = three-syllable words plus 8 criteria
18,2	S20	general position criteria; final silent e excluded (e.g., none - CVC)
	S21	1 = -ouse: a = one-syllable words; b = two- and three-syllable words 2 = -ase: a = one-syllable words; b = two- and three-syllable words 3 = -ease 4 = -ose
18,3		1 = arV 2 = arrV 3 = other
18,4		1 = one-syllable words 2 = two-syllable words; first syllable stressed with a vowel 13 rule 3 = two-syllable words; first syllable stressed with other vowel rule 4 = two-syllable words; second syllable stressed

Block 19

19,1	-ment	1 = base + ment 2 = other
	-or	1 = no change in base 2 = ∅
	-ive	1 = no change in base 2 = changes in base
	-ness	1 = no change in base 2 = y → i [i] + ness
	-ance/-ant	1 = no change in base 2 = changes in base 3 = other
19,2	IE13	1 = one-syllable words 2 = two-syllable words

	124 + GH10	general position criteria, with gh as part of of the vowel (i.e., igh = V)
	GH10	1 = gh# 2 = ght# 3 = two- and three-syllable words
	H20	1 = h → ∅ /#__ 2 = h → ∅ / __# 3 = h → ∅ / __V unstressed
19,3	K20	general position criteria, with kn as a consonant (e.g., knit = CVC)

	G20	1 = #gn
		 2 = gn#: a = ign (Rule 122); b = other

	W20	general position criteria, with wr as a consonant (e.g., wring = CVC)
19,4		general position criteria, with mb as a consonant (e.g., lamb = CVC)
19,5	L20	1 = -alk (Rule A23): a = one-syllable words; b = two-syllable words 2 = -olk (Rule 023) 3 = -alf 4 = -alv 5 = -alm
	T20	1 = -stle 2 = -sten 3 = -ften
19,6		1 = one-syllable words 2 = two-syllable words

Block 20

20,1	-y	1 = no change in base 2 = ∅ 3 = other
	-ful	alphabetical
	-al	1 = no change in base 2 = ∅
	-able	1 = no change in base 2 = ∅
	-sth, -less, -ist, -ish	alphabetical
20,2		general position criteria
20,3		1 = -ther: a = two-syllable words; b = three-syllable words 2 = -thern 3 = -the
20,4		1 = two-syllable words 2 = three-syllable words

Block 21

21,1		alphabetical
21,2		1 = two-syllable words 2 = three-syllable words, no changes: a = base + ion; b = other 3 = ∅ + ion 4 = base + ation: a = no change in base; b = ∅ 5 = miscellaneous changes in base 6 = tion + al 7 = tion → [ʧən] /s__
21,3	-sion → [ʒən]	
		1 = -ssion: a = two-syllable words; b = three-syllable words: i = no change in base, ii = t + ion → ssion, iii = other 2 = -sion/C__: a = two-syllable words; b = three-syllable words
	-sion → [ʒən]	
		1 = /V__ 2 = /r__ 3 = de + ion → sion: a = V → [V̄] /__{de, sion}; b = V → [V̆] /__de → [V̄] /__sion
21,4		1 = two-syllable words 2 = three syllable words

Criteria for Within-Rule
Sequencing of Fourth-Year Word List

Block 22

22,1
1 = V11, Ce#: a = first vowel: vowel 16 rule; b = first vowel: other vowel rule
2 = Y19#
3 = V15,C(C)(e)#
4 = other

22,2
1 = Y17#
2 = LE22#
3 = V17, 1#
4 = V17, r# or E21, r#
5 = A17#
6 = V17, C#
7 = V17, CC#
8 = V17, C(C)e#

22,3
1 = A17#
2 = V17, r# or E21, r#
3 = 025#
4 = V17, C(C)#
5 = V17, 1# or LE22#
6 = other

22,4
1 = EE10, (C)#
2 = other

Block 23

23,1 A29
1 = -aste#: a = base words; b = derived words and compounds
2 = -ange# (including derived forms)
3 = -ange...

A26
1 = #wa... (one-syllable words)
2 = #swa...(one-syllable words)
3 = #(s)wa (derived words and compounds)
4 = #(s)wa...(other two- and three-syllable words)
5 = #(s) qua...

23,2 I35
1 = /__#: a = one-syllable words; b = two- and three-syllable words
2 = -ine#
3 = other

I25
1 = -ion
2 = -ior
3 = -ia
4 = view
5 = other

23,3
alphabetical

Block 24

24,1
four-syllable compounds, -ing, -y, -er, -or, -ed

alphabetical

-ly
1 = base + ly
2 = ful + ly

24,2
1 = /__x: a = two-syllable words; b = three-syllable words
2 = /__v: a = one- and two-syllable words; b = three-syllable words; c = four-syllable words

24,3
1 = /__Cic: a = two-syllable words (plus affixes); b = three- and four-syllable words

		2 = /__Cit: a = two-syllable words (plus affixes); b = three-syllable words 3 = /__Cish 4 = /__Cid
24,4		1 = base + ity 2 = ∅ 3 = other

Block 25

25,1		1 = base + ion: a = no change in base; b = ∅ 2 = -ation: a = no change in base; b = ∅ 3 = ∅ + ition [išən] 4 = miscellaneous changes 5 = first vowel: [V̄] in base → [V̆] in affixed form (with various changes) 6 = other
25,2	I26	1 = two-syllable words: a = Ci; b = CCi 2 = three-syllable words: a = compounds, affixed words; b = other
	Y26	alphabetical
	U26	1 = two-syllable words 2 = three-syllable words
	E26	1 = two-syllable words 2 = three-syllable words
	A26, O26	alphabetical
25,3	I36	1 = two-syllable words 2 = -io# 3 = -ium# 4 = other three-syllable words 5 = four-syllable words
	Y36	alphabetical
25,4	A12	1 = two-syllable words 2 = three- and four-syllable words
	I12, Y12, O12, U12	alphabetical
25,5	E14	1 = re- 2 = other
	I14, Y14 A14, O14, U14	alphabetical

Block 26

26,1	-able	1 = no change 2 = ce: no change 3 = ∅ 4 = y → i [ay]
	-ment	alphabetical
	-al	1 = no palatalizations 2 = palatalizations
	-ness, -ary -ist	alphabetical
26,2	IE17	1 = base + ie 2 = other
	EY17	1 = base + ey 2 = other two-syllable words 3 = three- and four-syllable words
26,3		alphabetical
26,4		general position criteria, with r as part of V (i.e., ear = V)
26,5		general position criteria
26,6	EY10	general position criteria
	EI20	1 = eigh# (one-syllable) 2 = eight# (one-syllable) 3 = other one-syllable words 4 = affixed forms and two- and three-syllable words
26,7	-ous	1 = base + ous 2 = ∅ 3 = y → i + ous 4 = er → r + ous 5 = non-base 6 = -ous + suffix

	OU31	general position criteria
	OU35	general position criteria; R criteria
	OU33	general position criteria; R criteria
	OU34	general position criteria, with gh as part of V (i.e., ough = V)
26,8		general position criteria

Block 27

27,1	un-	1 = -ed# 2 = other
	in-, mis-, dis-	alphabetical
27,2	Stress pattern 4A	
		1 = ia(C)(e)#: a = ia#; b = ial#; c = other
		2 = {i, e} um#
		3 = Vr(y)#: a = ior#; b = Vr#; c = Vry#
		4 = Yi7#
		5 = -ence/-ent
		6 = Vble#
		7 = other
	Stress pattern 4B	
		1 = -ate#
		2 = other
27,3		1 = -ic# 2 = other
27,4		1 = -ary 2 = other
27,5		alphabetical
27,6	E32	1 = three-syllables → two-syllables: a = -ery#; b = -erence/-erent; c = -ing#; d = other 2 = three-syllables → two-syllables + affix 3 = four-syllables → three-syllables
	032	1 = three-syllables → two-syllables: a = -ory#; b = other 2 = four-syllables → three-syllables 3 = five-syllables → four-syllables
	A32, 132	1 = three-syllables → two syllables 2 = four-syllables → three-syllables

Section IV

SEQUENCED WORD LISTS

First-Year Word List: Frequency = 797

Block 1: Frequency = 315

1,1 Frequency = 10

N10, NN10, T10, A15, I15 Frequency = 10

1	an	at	in	inn	it
2	tan	tat	tin		
3	ant	tint			

1,2 Frequency = 11

P10 Frequency = 11

1b	pan	pat	pin	pip	pit
2b	nap	nip	tap	tip	
3a	pant				
5b	apt				

1,3 Frequency = 40

L10 Frequency = 7

1b	lap	lip	lit
2b	pal		
3a	lint		
5a	plan		
5c	Plant		

LL10 Frequency = 3

2a	ill	
2b	pill	till

S10 Frequency = 27

1b	sap	sat	sill	sin	sip
	sit				
4a	slap	slat	slip	slit	snap
	snip	span	spat	spill	spin
	spit	still			
4b	its	taps			
4c	slant				
5b	last	lisp	list	past	
5e	pants	split			

SS10 Frequency = 3

2a	ass	
2b	lass	pass

1,4 Frequency = 47

D10 Frequency = 14

1b	dad	did	dill	din	dip
2b	lad	lid	pad	sad	
3b	slid				
4b	and	land	sand		
4c	stand				

DD10 Frequency = 1

2b	add

E15 Frequency = 32

2b	dell	den	led	less	let
	net	pen	pep	pet	sell
	set	tell	ten		
3a	end				
4a	dent	lend	nest	pelt	pent
	pest	send	sent	tend	tent
	test				
4b	sled	sped	spell	step	
5a	slept	spend	spent		

1,5 Frequency = 101

M10 Frequency = 32

1b	mad	man	map	mass	mat
	men	mess	met	mill	miss
	mitt				

2a	am				
2b	dam	dim	tam		
3a	mast	melt	mend	mist	
3b	slam	slim	stem		
4b	elm				
5a	smell				
5b	damp	imp	lamp	limp	
5c	smelt				
5d	stamp				
5e	midst				
6a	tom-tom				

B10 Frequency = 28

1b	bad	ban	bass	hat	bed
	bell	bet	bib	bid	bill
	bin	bit			
2b	dab	tab			
3a	band	belt	bend	bent	beat
3b	slab	stab			
4a	blab	bled	bless	bliss	
4c	blast	blend	blimp		

U15 Frequency = 41

1b	up	us			
2b	bud	bum	bun	bus	but
	butt	dull	mud	mum	muss
	nut	pun	pup	sub	sum
	sun	sup	tub	tut	
3a	ups				
4a	bulb	bump	bust	dump	dust
	lump	lust	must	pump	
4b	plum	plus	slum	spun	stub
	stun				
5a	plump	stump	stunt		
5e	mumps				

1,6 Frequency = 106

R10 Frequency = 45

1b	ram	ran	rap	rat	red
	rib	rid	rim	rip	rub
	rum	run	rut		
3a	rend	rent	rest	rump	runt
	rust				

5a	brad	bran	brass	brat	dress
	drill	drip	drum	press	prim
	trap	trill	trim	trip	
5c	brand	primp	print	tramp	trump
	trust				
5e	strand	strap	strip	strum	strut
6a	rat-tat				

H10 Frequency =22

1b	had	ham	hat	hell	hem
	hen	hid	hill	him	hip
	hit	hub	hull	hum	hut
3a	hand	held	help	hemp	hint
	hump	hunt			

O15 Frequency = 39

1b	odd	on			
2b	bob	doll	dot	hop	hot
	lot	mob	mom	mop	nod
	not	pod	pop	pot	rob
	rod	rot	sob	sod	sop
	top	tot			
4a	bond	pond	romp		
4b	blot	drop	plod	plot	prop
	slop	slot	spot	stop	trot
5a	blond				
5e	prompt				

Block 2: Frequency = 51

2,1 Frequency = 29

SH10 Frequency = 29

1b	sham	shed	shell	shin	ship
	shop	shot	shut		
2a	ash				
2b	dash	dish	hash	hush	lash
	mash	mush	rush	sash	
3a	shalt				
3b	blush	brush	slush	smash	trash
4a	shred	shrill	shrub		
4c	shrimp				
5e	splash				

2,2 Frequency = 22

TH13 Frequency = 6

1b	than	that	them	then	this
	thus				

TH11 Frequency = 16

1b	thud	chin			
2b	bath	hath	lath	math	path
	pith				
3a	thump				
4a	thrash	thresh	thrill	thrush	
4b	depth	tenth			
4c	thrust				

Block 3: Frequency = 51

3,1 Frequency = 40

FE10 Frequency = 36

1b	eel				
2a	bee	see	tee	thee	
2b	beer	beet	deed	deep	deer
	heed	heel	meet	need	peel
	peep	peer	reed	reel	seed
	~~swem~~	seen	seep	sheep	sheet
	teeth				
3b	three	tree			
4b	bleed	sleep	sleet	speed	steel
	steep	steer			
5e	street				

E25 Frequency = 4

2a	be	he	me	she

3,2 Frequency = 11

Y19 Frequency = 11

2a	by	my	shy	thy	
3b	dry	pry	sly	spy	sty
	try				
6a	by-by				

Block 4: Frequency = 380

4,1 Frequency = 51

F10 Frequency = 51

1a	fee				
1b	fad	fan	fat	fed	feed
	feel	feet	fell	fib	fill
	fin	fish	fit	fun	fuss
2a	if				
2b	beef				
3a	fast	felt	fifth	film	fist
	fond				
4a	flap	flash	flat	fled	flee
	fleet	flesh	flip	flop	fly
	free	fresh	fret	fry	
4b	elf	self	shelf		
4c	flint				
5b	left	lift	raft	shaft	shift
	sift				
5d	draft	drift	thrift		

FF10 Frequency = 9

2b	buff	huff	muff	puff	
3b	fluff	sniff	staff	stiff	stuff

W10 Frequency = 31

1a	we	wee			
1b	web	wed	weed	weep	well
	wet	will	win	wish	wit
	with				
3a	went	wept	west	wilt	
5a	dwell	sweep	sweet	swell	swill
	swim	swish	tweed	tweet	twin
5c	swept	swift	twist		
5e	twelfth				

4,2 Frequency = 187

K10 Frequency = 37

1b	keen	keep	kid	kill	kin
	kiss	kit			
2b	leek	meek	peek	reek	seek
	week				

3a	kelp	kept			
4b	ask	bask	desk	disk	dusk
	elk	husk	mask	milk	risk
	silk	sulk	task	tusk	
5a	skid	skill	skim	skin	skip
	skit	skull	sky		

N20 Frequency = 34

5b	bank	bunk	hunk	ink	kink
	link	mink	pink	punk	rank
	rink	sank	sink	sunk	tank
	thank	think	wink		
5d	blank	blink	brink	drank	drink
	drunk	frank	plank	prank	shrink
	shrunk	skunk	slink	spank	stink
	trunk				

C12 Frequency = 59

1b	cab	cad	can	cap	cash
	cat	cob	cod	cop	cot
	cub	cud	cuff	cup	cuss
	cut				
3a	camp	cast			
4a	clad	clam	clan	clap	class
	cliff	clip	clod	club	crab
	cram	crash	creed	creek	creep
	crib	crop	crush	cry	
4c	clamp	clasp	clump	craft	cramp
	crank	crept	crest	crisp	crust
5a	scab	scat			
5b	act	fact			
5c	scalp	scamp	scant		
5d	tract				
5e	scrap	screen	scrub	strict	

CK10 Frequency = 57

2b	back	beck	buck	cock	deck
	dock	duck	hack	heck	kick
	lack	lick	lock	luck	neck
	nick	pack	peck	pick	rack
	rock	sack	shack	shock	shuck
	sick	sock	suck	tack	thick
	tick	tuck	wick		

3b	black	block	brick	click	clock
	cluck	crack	flock	frock	pluck
	prick	slack	slick	smack	smock
	speck	stack	stick	stock	stuck
	track	trick	truck		
5e	struck				

4,3 Frequency = 65

G12 Frequency = 65

1b	gag	gap	gas	gash	god
	got	gum	gun		
2b	bag	beg	big	bug	dig
	dug	fig	hag	hug	keg
	lag	leg	lug	mug	nag
	peg	pig	pug	rag	rig
	rug	sag	tag	tug	wag
	wig				
3a	gasp	gulf	guip		
3b	crag	drag	drug	flag	plug
	slag	slug	snag	stag	twig
4a	glad	glass	glee	glen	grab
	grass	greed	green	greet	grill
	grin	grip	grit	grub	gruff
4c	grand	grant	grunt		

4,4 Frequency = 32

J10 Frequency = 12

1b	jack	jam	jell	jet	jig
	job	jot	jug		
3a	jest	jump	junk	just	

X10 Frequency = 14

2a	ax	ox			
2b	box	fix	fox	mix	rex
	six	sox	tax	wax	
3b	flax				
5b	next	sixth			

Y10 Frequency = 6

1a	ye				
1b	yak	yap	yell	yes	yet

4,5 Frequency = 5

V10 Frequency = 2

1b van
3a vest

Z10 Frequency = 2

3a zinc
6a zig-zag

ZZ10 Frequency = 1

2b buzz

Second-Year Word List: Frequency = 2313

Block 5: Frequency = 68

5,1 Frequency = 36

Compounds Frequency = 36

bathtub	blacksmith	bobsled	cannot
catfish	catnip	chopstick	deerskin
fishpond	flagship	flashbulb	grandstand
gumdrop	hotbed	inkstand	inkwell
inland (P)	instep	lipstick	lockbox
milkman	milkweed	padlock	pickup
pigpen	sandbag	sandman	sheepman
shellfish	shotgun	sunset	teepee
tomcat	uphill	upset (N)	weekend

5,2

The -ing suffix with previously introduced base words.

5,3

The -es suffix (plurals and third-person singular, present tense forms) with previously introduced base words.

5,4

The -ed suffix (past tense) with previously introduced base words.

5,5 Frequency = 32

N710 Frequency = 32

2b	bang	ding	fang	gang
	hang	hung	king	lung
	rang	ring	rung	sang
	sing	sung	thing	wing
3b	bring	clang	cling	fling
	slang	sling	slung	sting
	stung	swing	swung	
5e	sprang	spring	sprung	string
	strung			

Block 6: Frequency = 260

6,1 Frequency = 177

A11 Frequency = 109

1bi	ale	ape	ate	
2bi	babe	bade	bake	bale
	cake	came	cane	cape
	cave	dame	date	fade
	fake	fame	fate	gale
	game	gate	gave	hate
	lake	lame	lane	late
	made	make	male	mane
	mate	name	pale	pane
	pave	rake	rate	rave
	safe	sake	sale	same
	sane	save	shade	shake
	sham	shape	shave	take
	tale	tame	tape	vane
	wade	wake	wane	wave
2bii	bare	care	dare	fare
	hare	mare	pare	rare
	share	ware		
4bi	blade	blame	blaze	brake
	brave	crane	crate	crave
	craze	drake	drape	flake
	flame	frame	glade	grade
	grape	grate	grave	graze
	plane	plate	scale	skate
	slate	slave	snake	spade
	spake	stake	stale	state
	stave	trade		
4bii	glare	scare	snare	spare
	stare			
5b	scrape			

I11 Frequency = 68

2bi	bike	bite	dike	dime
	dine	dive	fife	fine
	five	hide	hike	hive
	kite	life	like	lime
	line	live (Aj)	mile	mine
	mite	nine	pile	pine
	pipe	ride	rime	ripe
	rite	shine	side	site
	size	tide	tile	time
	vine	wide	wife	wine
	wipe			

2bii	tire	hire	mire	tire
	wire			
4bi	bride	crime	drive	glide
	pride	prize	shrine	slide
	slime	smile	snipe	spike
	spine	spite	stile	swipe
	tribe	twine		
5ei	sprite	stride	strike	stripe

6,2 Frequency = 83

O11 Frequency = 60

1bii	ore			
2bi	bone	code	coke	cone
	dole	dome	dope	dove (Vb)
	hole	home	hope	joke
	lone	mode	mole	nope
	note	poke	pole	pope
	robe	rode	role	rope
	rove	sole	tone	vote
	woke	wove	yoke	zone
2bii	bore	core	fore	more
	shore	sore	tore	wore
4bi	broke	clove	drove	froze
	globe	grove	slope	smoke
	smote	spoke	stole	stone
	stove	throne		
4bii	score	snore	store	swore
5bi	stroke			

U11 Frequency = 16

2bi	cube**	cute**	duke	dune
	June	mule**	rude*	rule*
	tube	tune		
2bii	cure**	pure**		
4bi	crude*	flute*	plume*	prune*

E11 Frequency = 3

1bi	eve
2bi	theme
2bii	here

EE10 + E18 Frequency = 4

4b	breeze	freeze	sleeve	sneeze

* = always pronounced [u]
** = always pronounced [yu]
Unasterisked words may be pronounced either [u] or [yu], but [u] predominates.

Block 7: Frequency = 36

7,1 Frequency = 36

C11 Frequency = 26

1b	cell				
2a	ace	ice			
2b	dice	face	lace	lice	
	mice	nice	pace	race	
	rice				
3a	cent				
3b	brace	fleece	grace	place	
	price	slice	space	spice	
	thrice	trace	twice		
5a	scene				
5e	spruce				

G11 Frequency = 10

1a	gee				
1b	gem	gin			
2a	age				
2b	cage	huge	page	rage	sage
3b	stage				

7,2 The -s, -d, and -ing suffixes added to words with general primary vowel Rule 11.

Block 8: Frequency = 68

8,1 Frequency = 45

Compounds with rules in Block 5-7 Frequency = 45

1	bathrobe	bedtime	beehive	campfire
	classmate	cupcake	drugstore	hillside
	inside	jump rope	keepsake	manhole
	milkshake	nickname	pancake	ragtime
	springtime	sunshine	tadpole	teenage
	upside	wishbone		
2	farewell	firefly	fireplace	fireside
	grapevine	herein	homemade	homesick
	icebox	iceman	limeade	limestone
	livestock	paleface	pipeline	polecat
	sagebrush	smokestack	spareribs	stovepipe
	tapeline			
3	gangplank	slingshot		

8,2 Frequency = 23

A16 Frequency = 6

1	abscess	address (N)	(P)	annex (N)
2	landscape	sampan	transplant	(N)

I16 Frequency = 3

1	index	insect
2	picnic	

U16 Frequency = 3

1	umpire	
2	muskrat	suspect (N)

E16 Frequency = 2

2	reptile	welfare

O16 Frequency = 9

1	concrete (P)	(AS)	conduct (N)	content (N)
	contest (N)	contract (N)		convent
2	bonfire	compact (N)		costume

Block 9: Frequency = 323

9,1 Frequency = 107

A21 Frequency = 40

1b	ark	arm	art	
2a	bar	car	far	jar
	mar	tar		
2b	bard	bark	barn	card
	carp	cart	dark	darn
	dart	farm	hard	hark
	harm	harp	lard	lark
	mark	marsh	park	part
	shark	sharp	tart	yard
	yarn			
3b	scar	star		
4b	scarf	smart	spark	start

1b batter blotter clipper cutter
dipper dropper drummer fibber
flapper gunner potter robber
runner shutter snapper stopper
swimmer thinner trapper winner
zipper

2a after amber antler aster
blister canter center cinder
cluster cracker enter fender
filter flicker gander ginger
hinder huckster limber lobster
locker lumber master member
mister monster number pester
plaster pucker scamper scatter
shelter silver sister slinder
slumber splinter sucker teeter
teeter-totter temper tender
thunder timber tinker under
winter yonder

2b banner better bitter bladder
blubber butter copper dinner
flutter fodder gutter hammer
holler inner ladder latter
letter litter manner matter
miller mutter otter patter
pepper pitter pitter-patter
platter rubber rudder setter
shatter skipper slipper spatter
summer supper tatter teller
twitter udder upper

3 ferment (N) perfume termite

4 adverb cistern concert expert
iceberg lantern pattern transfer (N)
western

U21 Frequency = 5

1 sandbur sunburn
2 burdock murmur murder

I21 Frequency = 4

1 birdseed blackbird catbird redbird

021 Frequency = 26

1a or
2a for nor
2b born cord cork corn
ford fork form fort
forth horn lord morn
north pork port short
sort thorn torn worn
4b sport stork storm

U21 Frequency = 15

1b urn
2a bur fur purr
2b burn curb curd curl
furl hurt turn
3b spur
4a burnt burst
4b slurp

I21 Frequency = 14

2a fir sir
2b bird birth dirt shirt
third
3b stir
4a first thirst
4b flirt skirt swirl twirl

E21 Frequency = 12

2a her per
2b berth fern germ herd
jerk pert term verb
4b clerk stern

9,2 Frequency = 193

821 Frequency = 151 (plus agent noun and comparative adjective forms of previously introduced words)

1a banker bumper burner camper
dresser dweller flyer gusher
hanger helper herder hunter
jumper keeper milker mixer
picker planter printer renter
ringer singer sleeper speller
stinker sweeper thrasher

A21 Frequency = 18

1	backyard	barnyard	birchbark	carfare
	farmyard	graveyard	hardware	skylark
	starfish	streetcar	stockyard	yardstick
2	barber	farmer	garter	parker
	partner	starter		

O21 Frequency = 15

1	cornflake	landlord	northland	popcorn
	sandstorm	shortcake	shortcut	shortstop
2	corner	former	order	porter
3	platform	torment (N)	transport (N)	

9,3 Frequency = 23

A25 Frequency = 11

2a	war			
2b	ward	warm	warn	wart
4a	warmth			
4b	dwarf	swarm		
6a	wardrobe	warm-up		
6b	warmer			

O22 Frequency = 12

2b	word	work	worm	worth
4a	world	worst		
6a	fireworks	framework	homework	silkworm
	workshop			
6b	worker			

Block 10: Frequency = 575

10,1 Frequency = 211

I17 Frequency = 34

1	furnish	greenish	reddish	ruobish
	selfish	varnish		
2	anvil	attic	baudit	derrick
	goblin	hermit	horrid	margin
	martin	napkin	orbit	pencil
	pilgrim	pumpkin	rabbit	splendid
	summit	tennis	tonsil	torrid
	traffic	turnip	victim	worship
3	artist	dentist	district	florist

U17 Frequency = 6

1	cactus	campus	circus	fungus
2	album	stirrup		

E17 Frequency = 89

1a	darkness	gladness	illness	sadness
	sickness			
1b	careless	homeless		
2a	bidden	bitten	blacken	deepen
	fatten	flatten	harden	ridden
	rotten	sharpen	silken	sweeten
2b	dotted	spotted	stranded	
3a	actress	harness	mattress	mistress
	princess	reckless		
3b	burden	garden	happen	kitten
	mitten	pollen	sudden	
3c	wicked			
4	anklet	basket	blanket	bonnet
	bracelet	bucket	carpet	casket
	cricket	goblet	jacket	locket
	magnet	mallet	market	packet
	pallet	pellet	pocket	puppet
	racket	russet	scarlet	skillet
	tablet	thicket	ticket	trumpet
	velvet			
5	cancel	funnel	kennel	kernel
	mantel	nickel	parcel	pretzel
	tassal	tinsel	tunnel	vessel
6	absent	current	forest	garment
	harvest	hundred	object (N)	pavement
	perfect	problem	statement	subject (N)

A17 Frequency = 45

1	brakeman	busman	fireman	foreman
	freshman	huntsman	workman	
2	comma	extra	larva	Santa
3	central	dental	formal	moral
	normal	oral	rascal	sandal
	signal			
4	bantam	canvas	errand	gallant
	German	infant	organ	pennant
	servant			
5a	burglar	cellar	collar	dollar
	grammar	nectar	poplar	vulgar
5b	backward	blizzard	custard	forward
	homeward	mustard	standard	upward

017 Frequency = 37

1	button	cannon	canyon	carbon
	carton	common	cotton	crimson
	gallon	lesson	mutton	pardon
	person	ribbon	sermon	
2	blossom	bottom	freedom	gallop
	hammock	hassock	mammoth	method
	pistol	scallop	seldom	
3	actor	arbor	armor	doctor
	effort	harbor	mirror	oxford
	parlor	stubborn	tractor	

10,2 Frequency = 227

Y17 Frequency = 143

1	badly	barely	bravely	gladly
	hardly	homely	lately	likely
	lively	lonely	manly	nicely
	partly	prickly	promptly	sadly
	safely	shapely	shortly	sweetly
	swiftly	warmly	weekly	
2a	billy	bumpy	creepy	curly
	dirty	dolly	dusty	fluffy
	fussy	fuzzy	greedy	hilly
	horny	inky	jelly	lucky
	messy	milky	needy	rocky
	rusty	sandy	silky	sleepy
	smarty	sticky	stormy	sulky
	tarty	thirsty	thorny	thrifty
	tricky			
2b	daddy	fatty	funny	furry
	mommy	muddy	puppy	skinny
	sunny	teddy	zippy	
3	fifty	forty	ninety	sixty
	thirty	twenty		
4a	belly	berry	biddy	bonny
	buddy	bunny	ditty	dizzy
	dummy	ferry	golly	gully
	gunny	happy	hobby	holly
	hurry	jiffy	jolly	kitty
	lobby	mammy	middy	penny
	poppy	shabby	shinny	silly
	sorry	stubby	tabby	taffy
	tally	toddy	worry	wuzzy

4b	angry	army	brandy	candy
	cranky	dandy	derby	empty
	fancy	frisky	gently	glory
	grizzly	handy	hungry	husky
	kinky	lanky	mercy	merry
	nasty	pantry	party	perky
	plenty	safety	simply	stingy
	story	sturdy	tardy	teeny
	ugly	wobbly		

LE22 Frequency = 84

1	apple	battle	bottle	bubble
	cattle	coddle	cripple	crippled
	fiddle	gobble	huddle	kettle
	little	middle	muzzle	nibble
	nipple	paddle	pebble	peddle
	puddle	puzzle	rattle	rattle
	riddle	ripple	ruffle	saddle
	scribble	settle	tattle	wabble
2	angle	ankle	beetle	buckle
	bundle	cackle	candle	circle
	crackle	crumble	dangle	dimple
	feeble	freckle	fumble	gargle
	gentle	grumble	handle	jingle
	jungle	kindle	mantle	marble
	needle	nimble	pickle	pimple
	purple	rumble	sample	scramble
	shingle	simple	single	sparkle
	speckle	sprinkle	steeple	stumble
	tackle	tangle	temple	thimble
	tickle	tinkle	trample	tumble
	turtle	twinkle	uncle	warble

10,3 Frequency = 8

Compounds Frequency = 8

herself	himself	itself	myself
northwest	upon	upset(V,A))	within

10,4 Frequency = 40

I16 Frequency = 14

1	indent	inflate	inform	insane
	inspect	intend	invent	invite
2	disgrace	dismiss	distress	disturb
3	impure	mistake		

U16 Frequency = 5

1	undress	unlace	unlock	
2	unless	until		

A16 Frequency = 3

	pastel	transplant(Vb)	transport(Vb)

O16 Frequency = 2

	stockade	trombone

E21 Frequency = 5

	ferment(Vb)	percent	perfect(Vb)	perform
	perhaps			

O21 Frequency = 2

	cornet	torment(Vb)

EE10 Frequency = 9

	indeed	fifteen	fifteenth	nineteen
	nineteenth	sixteen	sixteenth	thirteen
	thirteenth			

10,5 Frequency = 89

A17 Frequency = 38

1	aback	afar	afire	alike
	alive	alone	apart	ashore
	asleep	awake	awoke	
2	abode	acute	address(Vb)	admire
	admit	adopt	adult	afford
	agree	alarm	alas	alert
	amaze	annex(Vb)	apply	arrest
	arrive	assume	attack	attend
	attract			
3	canal	lapel	manure	parade
	salon	salute		

E17 Frequency = 20

1	except	excite	expect	explode
	explore	express	extend	extent
2	entire	escape		
3	between	cement	degree	describe
	respect	restore	secrete	sedan
	select	shellac		

O17 Frequency = 24

1	condense	conduct(Vb)	connect	content(A)
	contest(Vb)	contract(Vb)		
2	collect	command	commence	compact(A),Vb)
	complete			
3	produce(Vb)	progress(Vb)	project(Vb)	promote
	protect	provide		
4	object(Vb)	o'clock	polite	
5	corral	correct	forgot	forlorn

U17 Frequency = 5

subject(Vb)	subtract	supply	support
suspect(Vb)			

I17 Frequency = 2

cigar	divide

Block 11: Frequency = 214

11,1 Frequency = 41

NG10 Frequency = 41

1	backing	being	blessing	breeding
	camping	clipping	cutting	dashing
	dressing	drumming	ending	filling
	greeting	helping	landing	licking
	meeting	mending	packing	rocking
	setting	spelling	stuffing	tatting
	thrilling	trimming	trying	warning
	wedding	willing		
2	cunning	darling	duckling	dumpling
	herring	kindling	morning	shirting
	stocking			
3	hangar (P)	kingdom		

11,2 Frequency = 97

CH10 Frequency = 68

1b	chat	check	cheek	cheer
	chess	chick	chill	chin
	chip	chop	chuck	chug
	chum			
2b	beech	much	rich	such

3a	charm	chart	chest	chime	
	chink	chirp	choke	chore	
	chunk	church	churn		
3b	speech				
4b	belch	bench	birch	bunch	
	hunch	inch	lunch	march	
	munch	perch	pinch	porch	
	punch	ranch	torch		
4d	branch	crunch	French	starch	
	tfench				
6a	workbench				
6b	cheery	chilly	crunchy	rancher	
7a	channel	chapter	chatter	checker	
	cherry	chicken	children	chipmunk	
	chubby				
7b	attach	sandwich(P)			
7c	merchant	orchard			
10a	chitter-chatter				

TCH10 Frequency = 29

2a	itch			
2b	batch	catch(P)	ditch	fetch
	hatch	hitch	latch	match
	notch	patch	pitch	thatch
	witch			
3b	crutch	Scotch	sketch	stitch
	switch			
5e	scratch	stretch		
6a	hopscotch			
6b	catcher(P)	pitcher	stretcher	
7c	catchup(P)	hatchet	kitchen	satchel

11,3 Frequency = 23

WH10 Frequency = 23

1a	why			
1b	whack	wheel	when	which
	whip	whiz	whizz	
3a	whale	wharf	while	whine
	whirl	white		
6a	bobwhite	whalebone		
6b	wheeler			
7a	whimper	whinny	whisker	whisky
	whisper			
7c	awhile			

11,4 Frequency = 24

QU10 Frequency = 24

1b	quack	queen	queer	quick
	quit	quiz		
3a	quake	quart	quilt	quite
	quote			
5c	square	squeeze	squirm	squirt
6a	quicksand			
6b	quicken	quickly		
7a	quarrel	quarry	quartet	quarter
7c	banquet	squirrel		

11,5 Frequency = 19

GG10 Frequency = 17

1	egg	eggplant		
2	baggage	beggar	buggy	dagger
	giggle	maggot	nugget	piggish
	ragged	rugged	shaggy	stagger
	waggle	wiggle	wiggly	

GG12 Frequency = 2

	hiccup	soccer	

11,6 Frequency = 10

G31 Frequency = 10

1	get	gift	gig	gill
	girl			
2	anger	finger	linger	
3	forget	target		

Block 12: Frequency = 486

12,1 Frequency = 51

AY10 Frequency = 51

2a	bay	day	gay	hay
	jay	lay	may	nay
	pay	ray	say	way
3b	bray	clay	gray	play
	pray	slay	stay	sway
	tray			

5b	spray	stray			
6a	ashtray	birthday	crayfish	daytime	
	driveway	freeway	haycock	haystack	
	maybe	pathway	playmate	plaything	
	runway	weekday			
6b	grayish	payment	player	saying	
7b	away	display	midway	today	
	subway	Sunday(P)			
7c	crayon	layer	mayor	prayer	

12,2 Frequency = 189

EA11 Frequency = 145

1ai	pea	sea	tea		
ii	flea	plea			
iii	peacock	peanut	seashore	seasick	
	seaweed	teacup	teapot		
1bi	deal	heal	meal	peal	
	real	seal			
ii	squeal	steal			
iii	misdeal	really	sealskin		
iv	appeal	realize			
1c	beam	seam	team		
ii	cream	dream	scream	steam	
	stream				
iii	steamer	steamship	streamer	streamline	
	sunbeam	upstream			
1di	beach	each	leach	peach	
	reach	teach			
ii	preach				
iii	preacher	teacher	teaching		
1e	cheap	heap	leap	reap	
1fi	leash	peace			
iv	beacon	eager	eagle		
2a	beard	dear	ear	fear	
	gear	hear	near	rear	
	sear	shear	tear(N)	year	
ii	clear	smear	spear		
iii	dearly	earring	near-by	nearly	
	smeary	shearer	yearly		
iv	appear	dreary	weary		
2bi	beat	cheat	feat	eat	
	heat	meat	neat	peat	
	seat	wheat			
ii	bleat	pleat	treat		
iii	beaten	beater	eaten	heater	
	mincement	neatly	neatness		

2ci	beak	leak	peak	weak
ii	bleak	creak	sneak	speak
	squeak	streak		
iii	leaky	squeaky		
2d	bean	lean	mean	wean
ii	clean			
iii	beanbag	cleaner	cleanup	meaning
	meanwhile			
2ei	beast	east	feast	least
	yeast			
iii	northeast			
iv	Easter			
3a	bead	lead(Vb)	read (present tense)	
iii	beaded	leader	reading	
iv	beadle			
3bi	leaf			
iii	leafy			
3ci	leave	weave		
iv	beaver			
3di	heath			

EA31 Frequency = 44

1i	health	wealth		
ii	healthy	wealthy		
3ai	dead	head	lead(N)	read(past tense)
ii	bread	dread	spread	stead
	thread	tread		
iii	bedstead	forehead	heading	homestead
	instead	threadbare		
iv	ahead	ready	steady	
3b	bear	pear	tear(V)	wear
ii	swear			
iii	bearskin			
3ci	deaf	death	meant	
ii	breath	breast	dreamt	sweat
iii	breastplate	redbreast	sweater	sweaty
iv	breakfast	heaven	heavy	weapon

12,3 Frequency = 143

0011 Frequency = 89

1ai	boo	coo	moo	too
	zoo			
iv	bamboo	boohoo	igloo	shampoo
	tatoo			

1bi	coon	loon	moon	noon	
	soon				
ii	spoon				
iii	forenoon	moonbeam	noonday	noontime	
	teaspoon				
iv	balloon	cartoon	cocoon	harpoon	
	raccoon	saloon			
1ci	boom	loom	room		
ii	bloom	broom	groom		
iii	bathroom	bedroom	bloomer	blooming	
	broomstick	classroom	gloomy	lunchroom	
	playroom	roommate	stateroom	storeroom	
1di	coop	hoop	loop	whoop	
ii	droop	scoop	stoop	swoop	
	troop				
1ei	booth	tooth			
iii	toothbrush	toothpick			
1fi	boost	roost			
iv	rooster				
2i	cool	fool	pool	tool	
ii	spool	stool			
iii	cooler	foolish	toolbox		
3aii	boot	hoot	loot	root	
	shoot	toot			
iii	shooter				
iv	bootee	scooter			
3bi	food	mood			
ii	brood				
iv	poodle				
3ci	roof				
ii	proof				
iii	fireproof				
3di	moor	poor			
3eiv	spooky				

0012 Frequency = 54

2i	book	cook	hook	look
	looks	nook	rook	shook
	took			
ii	brook	crook		
iii	bookman	cookbook	cooker	cooky
	crooked	fishhook	hooky	notebook
	scrapbook	textbook	unhook	
iv	booklet			
3ai	good	hood	wood	
ii	stood			

iii	driftwood	firewood	goodby	goodness
	goodwill	goody	manhood	redwood
	woodchuck	wooded	wooden	woodland
	woodpile	woodshed	woodwork	woody
3bi	foot	soot		
iii	barefoot	footstep		
iv	afoot			
3ci	wool			
iii	woolen	woolly		
3di	hoof	woof		
3eiv	whoopee			

12,4 Frequency = 103

OW11 Frequency = 60

1b	owe	own		
2a	bow(N)	low	mow(Vb)	row(Vb, N)
	show	sow(Vb)	tow	
2b	bowl	shown	sown	
3b	blow	crow	flow	glow
	grow	slow	snow	stow
	throw			
4b	blown	flown	grown	thrown
6a	grownup	scarecrow	showman	slowpoke
	snowbank	snowbird	snowdrift	snowdrop
	snowflake	snowman	snowstorm	
6b	bowling	grower	lowly	owner
	slowly	snowy		
7b	bellow	borrow	elbow	fellow
	follow	furrow	hollow	meadow
	mellow	minnow	morrow	pillow
	shallow	sorrow	tallow	willow
	window	yellow		

OW12 Frequency = 43

1a	ow			
1b	owl			
2a	bow(Vb, N)	chow	cow	how
	mow(N)	now	row(N)	sow(N)
	wow			
2b	down	fowl	gown	howl
	town			
3b	brow	plow		
4b	brown	clown	crowd	crown
	drown	frown	growl	
6a	bowwow	downtown	somehow	uptown

6b	brownish	downy	downward	
7b	allow			
7c	bowel	bower	coward	flower
	howdy	powder	power	shower
	tower	vowel		

Block 13: Frequency 198

13,1 Frequency = 73

031 Frequency = 38

2b	son	ton	won	
4a	come	done	dove(N)	love
	month	none	shove	some
4b	from			
5a	front	glove		
6a	frontward	grandson	lonesome	someday
	something	sometime	tiresome	
6b	lovely	sonny	undone	
7a	oven			
7c	above	among	color	compass
	cover	dozen	govern	income(P)
	Monday(P)	nothing	shovel	welcome
	wonder			

U31 Frequency = 35

1	bull	bush	full	pull
	push	puss	put	
2	armful	bashful	careful	cheerful
	cupful	dreadful	graceful	grateful
	handful	harmful	hateful	healthful
	helpful	peaceful	playful	skillful
	spoonful	thankful		
3	bullet	bully	bushel	bushy
	butcher	fullback	pudding	pullman
	pulpit	pussy		

13,2 Frequency = 52

A23 Frequency = 26

1i	all	ball	call	fall
	gall	hall	tall	wall
ii	small	stall		
iii	baseball	fallen	football	hallway
	smallpox	snowball	snowfall	

2i	halt	malt	salt	
iii	halter	malted	salty	
iv	altar			
3i	bald			
ii	scald			

023 Frequency = 26

1i	boll	poll	roll	toll
ii	troll			
iii	roller	tollgate		
2i	bold	cold	fold	gold
	hold	mold	old	sold
	told			
ii	scold			
iii	folder	golden	goldfish	holder
	molding	olden		
3i	bolt	colt	jolt	

13,3 Frequency = 73

122 Frequency = 21

1i	bind	find	hind	kind
	mind	rind	wind(Vb)	
ii	blind	grind		
iii	binder	blindfold	kindly	kindness
	winding	windup		
2i	child	mild	wild	
iii	grandchild	wildcat	wildly	

024 Frequency = 52

1ai	dong	gong	long	song
	tong			
ii	strong	throng		
iii	dingdong			
iv	along	oblong		
1bi	bog	dog	fog	hog
	log	tog		
ii	clog	frog		
iii	bulldog	doggy	dogwood	foggy
	hotdog	leapfrog		
1ci	off			
iii	blast-off	kickoff	take-off	
iv	coffee	coffin	office	
1di	loft	soft		
iii	hayloft	softly		

1ei	honk				
3ai	boss	loss	moss	toss	
ii	cross				
iii	crossing	glossy			
iv	across				
3bi	cost	lost			
ii	frost				
iii	frosting	frosty			
iv	ostrich				
3ci	moth				
ii	cloth				

Block 14: Frequency = 85

14,1 Frequency = 40

Stressed VCCe# Frequency = 40

1a	badge	bridge	dodge	edge
	fudge	hedge	judge	lodge
	pledge			
1b	hedgehog			
1c	badger	midget		
2a	fringe	hinge	plunge	sponge
2b	chance	dance	dunce	fence
	glance	lance	mince	prance
	prince	since		
2ci	dense	rinse	sense	
2cii	immense	nonsense		
3	bulge	else	shelve	twelve
4a	bronze	grippe		
4b	barrette	giraffe	lacrosse	

14,2 Frequency = 18

Stressed VrCe# Frequency = 18

1a	curse	horse	nurse	purse
	verse	worse		
1b	horseback	converse	immerse	
2	carve	curve	nerve	serve
	starve			
3	charge	gorge	large	urge

14,3 Frequency = 27

Unstressed VCCe# and VCe# Frequency = 27

1	absence	distance	entrance	sentence
	substance			
2	bandage	cabbage	college	cottage
	garbage	message	package	passage
	village			
3	furnace	justice	lettuce	necklace
	practice	service	surface	
4	capsule(P)	engine	fertile	injure
5	orange	porridge		

Third-Year Word List: Frequency = 3253

Block 15: Frequency = 915

15,1 Frequency = 84

2-3 one-syllable words with First-Year rules, Frequency = 84

Alps	bluff	brag	breed
brim	brisk	bunt	clank
clash	clef	clomp	cog
crock	deem	disc	dwelt
flank	flask	flunk	flush
fund	gland	gosh	grasp
gull	gust	gut	helm
hiss	jazz	lab	leer
lest	loll	lull	mesh
mid	mint	mock	mull
musk	nun	puck	pulp
pus	plush	rash	scum
sect	seer	sex	sheen
sheer	shod	skeet	slash
sleek	smith	snack	sneer
snub	snug	splint	sprint
spud	steed	stilt	Swiss
tempt	text	theft	throb
vamp	vast	vat	vent
vex	vim	weld	wend
width	yam	yank	yelp

15,2 Frequency = 831

2-3 words with Second-Year rules, Frequency = 831

Block 5: Frequency = 31.

5,1 Compounds

	blackjack	bobcat	buckshot	buckskin
	cobweb	codfish	dishpan	dishrag
	flagstaff	grandad	grassland	handbag
	handcuff	hemlock	humbug	jackass
	junkman	pigskin	ramjet	ramrod
	redskin	sheepskin	snapshot	standstill
	sunbath	sunfish	sunstruck	upkeep
	upland			
5,5 NG10	clung	ping		

Block 6: Frequency = 41

6,1 A11	bate	blare	crape	gape
	gaze	glaze	hale	maze
	rape	shale	vale	
I11	bile	file	pike	prime
	sire	spire	strife	swine
	thine	wile		
6,2 O11	bole	cope	cove	doze
	drone	grope	pore	Rome
	rote	shone	stoke	strode
	yore			
U11	brute	lute	mute	yule
E11	mere	mete		
EE10 + E18	peeve			

Block 7: Frequency = 4

7,1 C11	mace	sceptre	vice
G11	wage		

Block 8: Frequency = 50

8,1 Compounds

	backbone	bedside	brimstone	firebug
	glassware	hereby	hotline	lampshade
	lifetime	red-wing	sandstone	shipmate
	spruce-up			
8,2 A16	abstract	ally(N)	alpine	athlete
	baptize	bankrupt	capsize	cahsmere
	mascot	pastime	shamrock	
I16	dictate	incline(N)	impact	import(N)
	instinct	insult(N)	kidnap	linseed
	mishap			
U16	nutmeg	suffix		
E16	empire	export(N)	extract(N)	textile
O16	bonbon	combat(N)	combine(N)	complex
	compress(N)	conflict(N)	construct(N)	contact
	contrast(N)	convict(N)	prospect	

Block 9: Frequency = 95

9,1 A21	harsh			
O21	scorn	shorts	snort	
U21	blur	blurt	burr	cur
	surf	turf		

	I21	firm			
	E21	serf			
9,2	E21	blunder	butler	cancer	canker
		capper	clatter	cobbler	convert(N)
		creeper	cruller	culvert	differ
		duster	elder	feeler	finder
		gender	glimmer	glitter	hamper
		insert(N)	jester	jobber	killer
		lifter	mid-term	permit(N)	plotter
		popper	prosper	putter	rafter
		render	rocker	scrapper	seeker
		sherbert	shudder	slacker	slicker
		smelter	snicker	splatter	stepper
		sticker	suffer	tamper	tanner
		tester	thriller	tinder	totter
		usher	wicker		
	U21	burlap	surplus	surname	turnpike
	I21	birthplace			
	A21	boxcar	firearm	hardship	marker
		parsnip	rampart	shipyard	
	O21	borax	border	concord	corncob
		cornstarch	export	import	leghorn
		porthole			
9,3	A25	lukewarm	warbler	warden	warlike
		warp	warpath	warship	
	O22	byword			

Block 10: Frequency = 328

10,1	I17	antic	artic	bobbin	classic
		fossil	frantic	garlic	gossip
		mannish	muffin	nostril	peevish
		transit	trellis	virgin	weevil
	U17	census	citrus		
	E17	anthem	bracket	congress	corset
		crescent	dampen	dampness	darken
		emblem	empress	ferret	fireless
		flannel	fortress	goddess	hamlet
		hardness	harmless	helmet	helpless
		hornet	hundredth	inlet	kindred
		likeness	madness	marvel	mistrel
		morsel	picket	priceless	restless
		rickets	rocket	sadden	segment
		shipment	shorten	sleepless	sleeveless
		socket	stillness	stricken	sullen
		sweetness	tempest	thicken	tireless
		torrent	trinket	wireless	witness
		worthless			

	A17	ballad	baseman	canvass	constant
		coral	craftsman	currant	delta
		distant	drunkard	garland	gizzard
		herdsman	Holland	instant	Ireland
		jackal	larval	mammal	marshal
		mental	mortal	northward	onward
		pillar	portal	scandal	shortage
		sportsman	stanza	sultan	trespass
		tundra	vassal	villa	vista
		warrant	westward		
	O17	ballot	beckon	bishop	captor
		castor	custom	error	factor
		falcon	horror	parson	pastor
		ransom	reckon	rector	sexton
		splendor	sponsor	summon	terror
		victor			
10,2	Y17	belfry	burly	caddy	clergy
		crabby	curry	deeply	dimly
		dingy	dory	entry	envy
		filthy	finely	firmly	fleshy
		folly	freely	gentry	glassy
		grassy	gritty	hanby	hardy
		madly	marshy	merely	misty
		mummy	musty	petty	pigmy
		putty	rally	rarely	rudely
		scanty	scurry	scurvy	sentry
		shanty	sickly	sissy	slushy
		speedy	starry	stately	stuffy
		sultry	thickly	trusty	widely
		wintry			
	LE22	ample	babble	brittle	crumple
		curdle	dazzle	drizzle	gamble
		griddle	humble	hurdle	jumble
		meddle	mingle	mumble	nettle
		nozzle	scuffle	shuttle	sickle
		spangle	spindle	startle	strangle
		throttle	tingle	topple	tremble
		trickle			
10,4	I16	disarm	discuss	disgust	dislike
		dispute	distinct	distract	import(Vb)
		impress	infect	infest	inflame
		inhale	insert(Vb)	insist	instruct
		invade	invest	misled	misspell
		sincere			
	U16	submit	subsist	unfit	unfurl
		unhand	unhurt	unkept	unpack
	O16	blockade			
	A16	abstract(P)	adhere(P)	cascade	stampede
		transmit			
	E21	permit(Vb)	perspire		

	O21	ornate			
	EE10	canteen	exceed	foresee	misdeed
		unseen			
10,5	A17	abide	absurd	adapt	adore
		adorn	advice	affect	aflame
		ally(Vb)	amend	ascend	assess
		assist	attempt	award	aware
		career	galore	Japan	
	E17	descend	descent	derive	devote
		effect	embrace	emerge	encamp
		endure	enforce	enlist	estate
		exhale	expand	expel	expend
		export(Vb)	extract(Vb)	extreme	extinct
		neglect	secede	seclude	secure
		severe			
	O17	combat(Vb)	combine	commit	compare
		compress(Vb)	concern	confess	confine
		confirm	conflict(Vb)	consent	consist
		construct(Vb)	consult	contrast(Vb)	convert(Vb)
		convict(Vb)	forbid	forgave	forsake
		oblige	obscene	offend	oppress
		provoke			
	U17	suppress	supreme		
	117	brigade	divine		

Block 11: Frequency = 61

11,1	NG10	bedding	dwelling	gangster	inning
		matting	netting	shilling	wording
11,2	CH10	arch	archer	beechnut	chant
		char	charter	cheep	chuckle
		cinch	drench	duchess	enchant
		gulch	hunchback	leech	parch
		parchment	scorch	starchy	
	TCH10	clutch	crotch	etch	hemstitch
		pitchfork	snatch	twitch	witchcraft
11,3	WH10	cartwheel	whit	whittle	
11,4	QU10	acquire	conquest	jonquil	quench
		quest	quill	quilter	quorum
		squid	squint	squire	tranquil
11,5	GG10	druggist	luggage	smuggle	snuggle
		struggle	trigger		
	CC12	accord	occur	yucca	
11,6	G31	gilt	hunger		

Block 12: Frequency = 107

12,1	AY10	array	betray	dismay	essay
		fray	gateway	maypole	midday
		portray	rayon	wayside	
12,2	EA11	beading	bleach	bleary	buckwheat
		clearly	cleave	conceal	creaky
		creamy	dean	dreamland	dreamy
		eastern	eastward	eater	fearless
		freak	gleam	glean	meanness
		meantime	meatless	mislead	plead
		reader	seaplane	seaport	seashell
		sneaker	speaker	teat	treatment
		treaty	unclean	veal	weakly
		weakness	zeal		
	EA31	bearer	bearing	bedspread	blockhead
		breastpin	breathless	deadly	dealt
		forbear	spreader	threat	threaten
12,3	OO11	bassoon	boob	bridegroom	croon
		doom	foodstuff	gloom	groove
		maroon	monsoon	noodle	ooze
		poorly	roofing	roomer	scoot
		snoop	snooze	spook	woo
	OO12	bankbook	brooklet	foothill	footprint
		footstool	forefoot	goodly	goodness
		woodman			
12,4	OW11	billow	blowtorch	blower	burrow
		growth	lowland	mower	mown
	OW12	downstream	Moscow	prowl	rowdy
		scowl	sundown	towel	township
		vow			

Block 13: Frequency = 58

13,1	O31	comfort	fearsome	hovel	hover
		London	monk	monthly	someplace
	U31	bullhead	fearful	fully	glassful
		hopeful	manful	pushcart	shameful
		shot-put	sinful		
13,2	A23	handball	install	squall	
	O23	ahold	enroll	goldfinch	goldsmith
		molder	stroll	unfold	uphold
		volt			

13,3	122	binder	blinding	chi'dhood	childish
		grinder	grindstone	mankind	unkind
	024	bong	bossy	Boston	broth
		bullfrog	costly	crossbar	crossbow
		crossword	flog	floss	froth
		gloss	Hong Kong	lofty	logger
		offer	ping-pong	show-off	softwood

Block 14: Frequency = 56

14,1		advance	avenge	budge	collapse
		convince	corpse	densely	dredge
		expense	France	glimpse	hence
		henceforth	incense	intense	involve
		ledge	misjudge	offense	partridge
		pence	pulse	response	ruge
		sixpence	sledge	solve	trudge
		valve	wedge	whence	
14,2		barge	commerce	discharge	disperse
		divorce	enlarge	force	forge
		horsefly	horseless	horseman	largely
		serge	surge		
14,3		active	bondage	captive	challenge
		doctrine	ermine	hostile	instance
		mileage	terrace	tonnage	

Block 16: Frequency = 494

16,1 Frequency = 140

AI10 Frequency = 140

	1bi	aid	ail	aim	
	ii	air			
	2bi	bail	bait	chain	tail
		faith	gain	gait	hail
		jail	laid	lain	maid
		mail	maim	main	nail
		paid	pail	pain	raid
		rail	rain	sail	tail
		vain	wail	wait	
	ii	chair	fair	hair	lair
		pair			

	4ai	faint	maize	paint	saint
		waist			
	4bi	braid	brain	claim	drain
		flail	frail	grain	plain
		quail	slain	snail	staid
		stain	trail	train	trait
	ii	stair			
	5ai	quaint			
	5bi	sprain	strain	strait	
	6ai	bandaid	bobtail	cattail	cocktail
		hangnail	horsetail	mailbag	mailbox
		mailman	mainland	nailfile	pigtail
		railway	rainbow	raindrop	rainfall
		rainstorm	shirtwaist		
	ii	airedale	airline	airplane	airport
		airshaft	airship	airway	armchair
		chairman	haircut	hairnet	hairpin
		stairway			
	6bi	faithful	jailer	maiden	mainly
		painter	painting	plainly	railing
		rainy	strainer	trailer	trainer
		training	waiter	unpaid	
	ii	airy	fairly	hairy	unfair
	7ci	acquaint	afraid	attain	await
		complain	complaint	contain	daily
		dainty	drainage	exclaim	explain
		failure	gaily	maintain	mermaid
		obtain	portrait(F)	restrain	sailor
		sustain	tailor	traitor	waitress
	ii	affair	dairy	despair	fairy

16,2 Frequency = 98

OU10 Frequency = 98

	1bi	ouch	out		
	ii	our			
	2ai	thou			
	2bi	bout	couch	foul	loud
		mouth	noun	pouch	pout
		shout	south		
	ii	sour			
	4ai	bound	count	found	gouge
		hound	mound	mount	pound
		round	sound	wound(Vb:	past tense of wind)
	4bi	cloud	crouch	proud	scout
		slouch	snout	spout	stout
		trout			

	ii	flour	scour		
	5ai	ground			
	5bi	bounce	lounge	ounce	pounce
		sprout			
	6ai	background	blowout	countdown	cutout
		dugout	fairground	foreground	hideout
		lookout	outfit	outline	outplay
		output	outrage	outside	outskirts
		playground	roundup	snowbound	southeast
		southwest	without		
	6bi	counter	countless	cloudy	founder
		loudly	mouthful	outer	outing
		pouter	proudly	roundish	slouchy
		soundly			
	7ai	outlet			
	7ci	about	account	aloud	amount
		announce	around	compound	council
		counsel	countess	county	discount
		flounder	foundry	grouchy	pronounce
		southward	surround		
	ii	devour			

16,3 **Frequency = 90**

OE10 **Frequency = 7**

1	doe	foe	hoe	toe
	woe			
2	tiptoe	toenail		

OA10 **Frequency = 83**

1bi	oak	oat	[illegible]rh	
ii	oar			
2ai	whoa			
2bi	boat	coach	coal	coat
	coax	foam	goal	goat
	load	loaf	loam	loan
	moan	moat	poach	roach
	road	roam	roan	shoal
	soak	soap	toad	
ii	boar	roar	soar	
4ai	boast	coast	roast	toast
ii	board	hoard		
4bi	bloat	cloak	croak	float
	groan	throat		
5bii	coarse	hoarse		

6ai	carload	charcoal	cloakroom	crossroad
	flatboat	lifeboat	oatmeal	railroad
	raincoat	roadside	rowboat	sailboat
	seacoast	stagecoach	steamboat	tugboat
	waistcoat(P)			
ii	billboard	blackboard	cardboard	seaboard
	sideboard	surfboard	uproar	
6bi	boating	coastal	coaster	loafer
	oaken	soapy	toaster	unload
ii	boarder	roaring		
7ci	afloat	approach	roadster	
ii	aboard			

16,4 **Frequency = 61**

AW10 **Frequency = 44**

1b	awe	awl		
2a	caw	jaw	law	paw
	raw	saw	thaw	
2b	bawl	dawn	fawn	hawk
	lawn	shawl	yawn	
3b	claw	craw	draw	
4b	crawl	drawn	spawn	
5b	sprawl	squaw	squawk	straw
6a	crawfish	drawbridge	jigsaw	lockjaw
	outlaw	rawhide	rickshaw	sawdust
	sawmill	seesaw	withdraw	
6b	drawing	lawful		
7a	awful	awkward	awning	
7c	gawky	lawyer		

AU10 **Frequency = 17**

2b	haul	maul		
4a	fault	gauze	haunt	launch
	sauce	vault		
6a	saucepan			
7a	auburn	August	author	
7c	applaud	faucet	laundry	saucer
	saucy			

16,5 **Frequency = 48**

OI10 **Frequency = 26**

1b	oil

2b	boil	coil	coin	foil	
	join	loin	soil	toil	
4a	choice	join	moist	point	
	voice				
4b	broil	spoil			
5a	spoilt				
6a	oilcloth				
6b	pointer	oily			
7a	ointment				
7c	appoint	avoid	coinage	doily	
	toilet				

0510 Frequency = 22

2a	boy	coy	joy	toy
6a	bellboy	boyhood	cowboy	soybean
	tomboy	toyland	toyshop	
6b	boyish	joyful		
7a	oyster			
7b	aboy	annoy	destroy	employ
	enjoy			
7c	loyal	royal	voyage	

16,6 Frequency = 57

UE10 Frequency = 20

2a	due	hue**	sue	
2b	duel	fuel**		
3b	blue*	clue*	flue*	glue*
	true*			
4b	cruel*			
6a	bluebell*	bluebird*	bluejay*	blueprint*
	skyblue*			
6b	cruelly*	untrue*		
7b	argue**	rescue**		

UI10 Frequency = 7

1	fruit*	juice	suit	
2	fruitcake*	grapefruit*	lawsuit	
3	pursuit			

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* = always pronounced [u]
** = always pronounced [yu]
Unasterisked words may be pronounced either [u] or [yu], but [u] predominates.

0810 Frequency = 30

2a	chew	dew	few**	mew**
	new	pew**	whew	
3b	blew*	brew*	crew*	drew*
	flew*	grew*	stew*	threw*
5b	screw*	strew*	strewn*	
6a	brandnew	dewdrop	newborn	New York
6b	newly	unscrew*		
7b	anew			
7c	jewel	pewter**	sewage	sewer
	steward			

Block 17: Frequency = 406

17,1 Frequency = 125

three-syllable compounds Frequency = 125

afternoon	alderman**	alongside	angleworm
applesauce	archbishop	backwoodsman#	baggageman*
barbershop	basketball	battleship	blackberry
blueberry	bluebonnet	bric-a-brac	bumblebee
buttercup	butterfly	buttermilk	butternut
butterscotch	buttonhole	candlestick	cannonball
checkerboard	coffeepot	commonwealth	cottonseed
cottontail	cottonwood	counterpane	crackerjack
cubbyhole	dairyman**	fairyland	fellowman*
ferryman**	ferryboat	fingernail	fingerprint
firecracker	fisherman**	flowerpot	flyaway
forefinger	gentleman**	gingerale	gingerbread
goldenrod	Grand Canyon	grandchildren	granddaddy
grasshopper	gunpowder	headquarters#	hereafter
hobbyhorse	Hollywood	horsepower	hummingbird
jellybean	jellyfish	leadership	lollypop
lumberjack	lumberman**	lumberyard	membership
midsummer	mockinghird	motorboat	needlework
New Orleans#	northeastern	northwestern	orangeade
outerspace	pallbearer	partnership	peppermint
pineapple	pocketbook	pumpkinseed(P)	

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** = always pronounced [yu]
Unasterisked words may be pronounced either [u] or [yu], but [u] predominates.

Block 17: * -man [mən] ** -man [mæn] # s = [z]

pussycat	quarterback	quicksilver	rattlesnake
runaway	salesmanship*	silverware	skyrocket
southeastern	southwestern	sportsmanship**	
strawberry	storybook	summertime	sunbonnet
sunflower	tattletale	teakettle	tenderfoot
three-cornered		thunderstorm	tinderbox
ting-a-ling	trustworthy	underbrush	underground
underline	underneath	underpass	undershirt
underskirt	understand	understood	undertake
undertook	underwear	uppercut	wildflower
windowpane	wintergreen	wintertime	wonderland

17,2 **Frequency = 165**

-er Frequency = 46

1	baker	blazer	choker	diner
	diver	driver	glider	grader
	hater	liner	maker	miner
	piper	poker	Quaker	racer
	rider	rover	ruler	saver
	scraper	shaker	shiner	skater
	tamer	trader	tuner	voter
2	carver	dancer	freezer	ledger
	lover	server	weaver	
3	fiddler	gobbler	muffler	peddler
	rattler	sampler	settler	sparkler
	tumbler			
4	drier	flier		

-en Frequency = 9

broken	frozen	ripen	shaken
spoken	stolen	taken	waken
woven			

-ing Frequency = 16

1	aging	biting	boring	daring
	dining	icing	lining	making
	piling	saving	shaving	siding
	striking	tubing		
2	bluing	carving		

* -man [mən] ** -man [mæn] # s → [z]

-Y Frequency = 14

1	bony	grimy	icy	scaly
	scary	shady	shaky	shiny
	smoky	stony	wavy	
2	fleecy	horsy	juicy	

-s Frequency = 50

1a	airs	arms	blinds	blues
	dues	eaves	goods	greens
	gums	hers	lens	means
	news	ours	shears	suds
1b	backwoods	beeswax	downstairs	insides
	newsboy	newsman	newsmen	salesman
	sideways	statesman	sweepstakes	tenpins
	upstairs	upwards		
1c	gallows	goggles	manners	oodles
	pincers	pliers	rompers	rubbers
	tidings	tweezers		
1d	ourselves	selves	sheaves	themselves
	wives			
2a	blazes	glasses	riches	
2b	funnies	studies		

-ed Frequency = 30

1a1	armed	bagged	barbed	bobbed
	chapped	charred	heeled	mashed
	skilled	tanned	webbed	winged(P)
1a11	checkered	concerned	doctored	hardboiled
	tattered			
1b	blessed(P)	peaked(P)		
2a1	bored	tired	famed	striped
2a11	ashamed	freckled	refined	unruled
2b	dated	faded		
3	candied			

17,3 Frequency = 116

-er Frequency = 47

1a	commander	container	customer	destroyer
	employer	follower	forester	gardener
	kidnapper	propeller	sharpener	sufferer
	trumpeter	transformer		
1b	announcer	condenser	divider	explorer
	producer	subscriber	villager	voyager

	2a	anteater	bookkeeper	bootlegger	cowcatcher(P)
		dogcatcher(P)		frankfurter	hairdresser
		hamburger	innkeeper	kingfisher	nutcracker
		penholder	roadrunner	sheepherder	stonecutter
		storekeeper	woodcutter	woodpecker	
	2b	caretaker	dressmaker	lifesaver	outsider
		sandpiper	skyscraper	teenager	

-en Frequency = 3

awaken	forgotten	forsaken	

-ing Frequency = 12

bookkeeping	bottling(P)	concerning	dairying
furnishings	happening	oncoming	outstanding
pertaining	seafaring	surroundings	Thanksgiving

-ed Frequency = 6

assorted	back-handed	excited	forested
left-handed	redheaded		

-ly Frequency = 48

1	aimlessly	bitterly	breathlessly	carelessly
	commonly	constantly	correctly	cowardly
	directly	eagerly	entirely	evenly
	extremely	foolishly	formerly	heavenly
	helplessly	immensely	instantly	intensely
	lovingly	normally	orderly	perfectly
	politely	quarterly	securely	severely
	sincerely	suddenly	westerly	willingly
2	angrily	cheerily	happily	heavily
	luckily	merrily	readily	steadily
3	awfully	carefully	cheerfully	faithfully
	gracefully	joyfully	peacefully	thankfully

Block 18: Frequency = 518

18,1 Frequency = 307

E13 Frequency = 123

1	rebel(Vb)	recall	recede	recent
	recess	recite	record(Vb)	redeem
	reduce	refer	refine	reform
	refuel	regard	rejoice	relate
	relay	relent	rely	remain
	remains	remark	remind	remit
	rename	repaid	repair	repay
	repeal	repeat	report	request
	require	retail	retire	return
	reveal	revenge	reverse	revive
	revolve	reward		
2	became	become	befall	before
	began	begin	begun	behave
	beheld	behind	behold	belong
	below	beneath	berate	beside
	besides	beware	bewitch	beyond
3	debate	decay	decent	decide
	decoy	deduct	defeat	defect
	defend	defense	define	delay
	demand	deny	depart	depend
	deport	detail	detect	device
4	elapse	elect	elope	equal
	era (P)	erect	even	event
	evil			
5	precede	predict	prefer	prefix
	prepaid	prepare	pretend	prevail
	prevent			
6	cedar	female	fever	frequent
	legal	meter	pecan (P)	scenic
	serum	tepee		
7	beginner	belonging	beloved (P)	equally
	frequently	recently	reducer	related
	reminder	reporter	retailer	revolver
	revolving			

013 Frequency = 73

1	oboe	odor	omit	opal
	open	oval	over	
2	proceed	prolong	protest	
3	bonus	cocoa	colon	cozy
	focus	holy	hotel	kodak
	local	locate	locust	mobile (P)
	Mohawk	molar	moment	motel
	motor	nomad	notice	polar
	Polish	pony	robot	Roman
	romance	rotate	sober	soda
	sofa	solar	thorax	token
	topaz	total	totem	vocal

4	clover	crocus	grocer	pronoun
	slogan	storage		
5	moreover	motorcar	motorman	opener
	opening	orally	overalls	overboard
	overcast	overcoat	overcome	overflow
	overhaul	overhead	overhear	overjoyed
	overland	overlook	oversleep	overtake
	overturn			

A13 Frequency = 43

1	acorn	agent	baby	bacon
	caper	crater	crazy	fatal
	favor	flavor	gravy	haven
	hazel	label	labor	laden
	lady	lazy	major	naked
	native	naval	navy	pagan
	paper	radar	raven	razor
	saber	taper	vacant	vapor
	wafer			
2	babytalk	flavoring	laborer	ladybug
	landlady	lazily	newspaper	sabertooth
	sandpaper	wallpaper		

I13 Frequency = 39

1	ideal	iris	Irish	item
	ivy			
2	china(China)	cider	digest	direct (P)
	divan (P)	fiber	final	finance
	license	lilac	minor	minus
	minute (Aj)	pilot	pirate	rival
	silence	silent	siren	tidy
	tiger	tiny	viking	vizor
	wiry			
3	bridal	climate	Friday	private
	spider	spiral		
4	chinaware	finally	silently	

U13 Frequency = 29

1i	Cuba**	cubic**	duty	hula*
	human** (P)	humane**(P)	humor** (P)	July

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	puny**	pupil**	ruby*	rumor
	tulip	tunic	tutor	unit**
	unite**			
iii	during	jury	mural**	rural*
2i	brunette*	brutal*	plumage*	student
	stupid	truly*		
ii	plural*			
3	superman			

18,2 Frequency = 152

S20 Frequency = 95

2a	use (Vb)			
2b	cause	cheese	chose	close (Vb)
	fuse	hose	muse	noise
	nose	pause	pose	raise
	rise	rose	these	those
	wise			
3b	bruise	cruise	praise	pose
	clause			
6a	crosswise	likewise	primrose	rosebud
	rosewood	sunrise		
6b	chosen	easy	noisy	noiseless
	rosy	unused	unwise	wisely
7b	abuse (Vb)	accuse	advise	amuse
	applause	arise	arose	because (P)
	Chinese (P)	compose	comprise	confuse
	despise	excuse	expose	oppose
	refuse	repose	suppose	surprise (P)
7c	daisy	desert (Vb)	deserve	desire
	drowsy	laser	miser	music
	peasant	poison	pleasant	present (Vb)
	preserve	preside	presume	raisin
	reason	resent	reserve	resist
	resolve	resort	result	rosette
	season	thousand	thousandth	treason
	trousers	weasel		
8a	cheeseburger	cheesecloth		
8b	amusing	composer	easily	pleasantly
	seasoning	noiselessly		

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S21 Frequency = 57

1a	blouse	grouse	house (N)	louse
	mouse			
1b	bathhouse	birdhouse	boathouse	clubhouse
	farmhouse	greenhouse	henhouse	hothouse
	houseboat	household	housekeeper	housemaid
	housetop	housewife	housework	meetinghouse
	mousetrap	pesthouse	playhouse	powerhouse
	roundhouse	smokehouse	storehouse	warehouse
2a	base	case	chase	vase
2b	basement	bookcase	erase	eraser
	pillowcase	purchase	showcase	staircase
	suitcase			
3	cease	crease	decrease	grease
	greasy (P)	increase	lease	release
4	caboose	goose	gooseberry	loose
	loosely	moose	noose	

18,3 Frequency = 29

A22 Frequency = 29

1	Arab	baron	caret	carol
	caroler	grandparent	parent	Paris
	tariff	vary		
2	arrow	arrowhead	barrel	barren
	carrier	carrot	carry	carryall
	garret	harrow	marrow	marry
	narrow	parrot	sparrow	tarry
	wheelbarrow			
3	scarce	scarcely		

18,4 Frequency = 30

025 Frequency = 30

1	fro	go	ho	lo
	no	so	tho	
2	hero	hobo	polo	silo
	solo	yoyo	zero	
3	alto	auto	banjo	bingo
	bronco	burro	cargo	fatso
	grotto	jello	lasso	lotto
	motto	stucco		
4	ago	hello		

Block 19: Frequency = 228

19,1 Frequency = 82

-ment Frequency = 23

1	advancement	agreement	amendment	amusement
	announcement	appointment	attainment	contentment
	employment	enjoyment	engagement	enrollment
	equipment	excitement	government	investment
	settlement			
2	apartment	assortment	compartment	department
	deportment	embankment		

-or Frequency = 14

1	conductor	contractor	director	erector
	governor	inspector	instructor	inventor
	professor	projector		
2	advisor	dictator	equator	survivor

-ive Frequency = 14

1	attractive	detective	digestive	effective
	excessive	inventive	oppressive	possessive
	progressive			
2	destructive	exclusive	expensive	explosive
	extensive			

-ness Frequency = 12

1	carelessness	eagerness	foolishness	gentleness
	politeness	selfishness		
2	bushiness	cleanliness	happiness	laziness
	loveliness	readiness		

-ance/-ant Frequency = 19

1	admittance	allowance	appearance	assistance
	assistant	attendance	attendant	descendant
	performance			
2	alliance	endurance	ignorance	ignorant
	reliance			
3	abundance	abundant	accordance	importance
	important			

19,2 Frequency = 88

IE11 Frequency = 8

1	die	fie	lie	pie
	tie			
2	magpie	necktie	untie	

I24 + GH10 Frequency = 60

2a	high	sigh	thigh	
2b	fight	light	might	night
	right	sight	tight	
4a	tights			
4b	blight	bright	flight	fright
	plight	slight		
6a	airtight	daylight	flashlight	foresight
	headlight	highchair	highjump	highland
	highway	lighthouse	midnight	moonlight
	nightgown	nighttime	right-hand	skylight
	streetlight	sunlight	upright	
6b	brighten	brightly	brightness	fighter
	frighten	frightful	highly	lighter
	lightly	mighty	relight	rightly
	slightly	tighten	tightly	
7c	delight	lightning	tonight	twilight
8a	overnight			
8b	delighted	highlander	right-handed	sight-seeing

GH10 Frequency = 13

1	bough	plough		
2	caught	naught	straight	taught
3	daughter	granddaughter	haughty	naughty
	slaughter	slaughterhouse		straighten

H20 Frequency = 7

1	herb	hour	
2	huh	pooh	ugh
3	graham	shepherd	

19,3 Frequency = 59

K20 Frequency = 26

1a	knee	knew	know	
1b	knack	knead	kneel	knell
	knit	knob	knock	knoll
	knot			
3a	knave	knelt	knife	knight
6a	jackknife	knapsack	knighthood	knothole
	pocketknife	topknot		
6b	knotty	unknown		
7a	knickers	knuckle		

G20 Frequency = 9

1	gnat	gnaw		
2a	assign	assignment	design	resign
	sign	signboard		
2b	campaign			

W20 Frequency = 24

1b	wrap	wrath	wreath	wreck
	wren	wretch	wring	wrong
3a	wrench	wrist	write	wrote
6a	shipwreck			
6b	rewrite	unwrap	wrapper	wrecker
	wringer	writer		
7a	wriggly	wrinkle	wristlet	written
8a	handwriting			

19,4 Frequency = 13

B20 Frequency = 13

2b	bomb	dumb	lamb	limb
	numb	thumb		
3b	crumb	plumb		
6a	dumbbell	lambskin	thumbtack	
6b	bomber	plumber		

19,5 Frequency = 40

L20 Frequency = 21

1a	balk	chalk	stalk	talk
	walk			
1b	beanstalk	chalkboard	cornstalk	sidewalk
	talker	walker		
2	folk	kinsfolk	yolk	
3	behalf	calf	half	halfway
4	calves	salve		
5	salmon			

T20 Frequency = 19

1	bristle	bustle	castle	gristle
	hustle	jostle	nestle	rustle
	thistle	trestle	whistle	wrestle
2	fasten	glisten	listen	listener (P)
	moisten			
3	often	soften		

19,6 Frequency = 121

U20 Frequency = 6

1	guard	guess	guest	guide
2	guilty	safeguard		

Block 20: Frequency = 121

20,1 Frequency = 49

-y Frequency = 12

1	archery	armory	cannery	creamery
	Germany	pottery	unity	
2	injury	sunshiny		
3	agency	loyalty	rivalry	

-ful Frequency = 9

colorful	forgetful	plentiful (y [i] → i [ɪ])	
powerful	sorrowful	teacupful	teaspoonful
unhealthful	wonderful		

-al Frequency = 12

1	orbital	personal	renewal	musical
2	arrival	festival	recital	

-able Frequency = 6

1	passable	peaceable	seeable	suitable
2	likable	lovable		

-eth Frequency = 5

fiftieth	fortieth	sixtieth	thirtieth	
twentieth				

-less Frequency = 4

colorless	odorless	penniless (y[i] → i[ɪ])	
regardless			

-ist Frequency = 4

loyalist	motorist	organist	soloist

-ish Frequency = 2

kittenish	yellowish

20,2 Frequency = 39

PH10 Frequency = 19

3a	phase	phone		
3b	graph			
4c	phrase			
5c	sphere	sphinx		
7a	phantom	pheasant	phony	photo
7c	asphalt	camphor	graphic	nephew
	orphan	pamphlet	phosphate	prophet
	sulphur			

CH31 Frequency = 20

3a	chord			
4c	chrome			
5a	school			
5c	scheme			
6a	schoolbag	schoolbook	schoolboy	schoolhouse
	schoolmate	schoolroom	schooltime	
6b	schooling			
7a	chorus	christen		
7b	stomach			
7c	echo	orchid	schooner	
8a	schoolmaster	schoolteacher		

20,3 Frequency = 27

TH12 Frequency = 27

1a	bother	brother	farther	feather
	further	gather	leather	mother
	other	rather	smother	weather
	whether	whither	wither	

	1b	brotherhood	brotherly	gatherer	godmother
		grandmother	leathery	otherwise	pinfeather
		stepmother	weatherman		
	2	northern			
	3	breathe			

20,4 Frequency = 6

CC11 Frequency = 6

1	accent	accept	succeed	success
2	acceptance	successful		

Block 21: Frequency = 177

21,1 Frequency = 37

un- Frequency = 19

unbroken	unbuckle	unbutton	unconcerned
uncover	uneasy	uneven	unhappy
unharness	unhealthy	uninjured	unlawful
unlucky	unpleasant	unruly	unselfish
untangled	untidy	unwelcome	

re- Frequency = 6

readmit	reconstruct	recover	reelect
remember	reopen		

dis- Frequency = 5

disagree	disappear	disappoint	discover
disorder			

in- Frequency = 4

incorrect	informal	inhuman	injustice

mis- Frequency = 3

misbehave	misconduct	mispronounce

21,2 Frequency = 81

-tion Frequency = 81

1	action	auction	caution	diction
	faction	fiction	fraction	friction
	mention	motion	nation	notion
	portion	potion	section	station
	traction			
2a	adoption	attraction	collection	connection
	construction	contraction	correction	direction
	distinction	election	eruption	exception
	extraction	infection	inspection	instruction
	invention	objection	prevention	protection
	selection	subtraction		
2b	affection	carnation	commotion	confection
	proportion	salvation	solution	
3	devotion	diction	donation	location
	oration	promotion	relation	rotation
	translation	vacation		
4a	formation	foundation	plantation	taxation
	temptation			
4b	quotation	starvation		
5	attention	conjunction	convention	description
	destruction	detention	inscription	intention
	junction	production	reception	reduction
	subscription			
6	fractional	sectional		
7	question	digestion	suggestion	

21,3 Frequency = 32

-sion → [ʃən] Frequency = 20

1a	mission	session		
1bi	confession	discussion	expression	impression
	possession	profession		
1bii	admission	commission	permission	
1biii	percussion	procession	succession	
2a	mansion	pension	tension	
2b	convulsion	dimension	expansion	

-sion → [ʒən] Frequency = 12

1	abrasion	occasion		
2	diversion	excursion		
3a	conclusion	erosion	explosion	seclusion
3b	collison	decision	division	provision

21,4 Frequency = 27

-ture Frequency = 27

1	capture	creature	culture	feature
	fixture	fracture	future	lecture

	mixture	moisture	nature	pasture
	picture	posture	puncture	rapture
	rupture	sculpture	structure	torture
	venture	vulture		
2	adventure	furniture	overture	seacreature
	signature			

Block 22: Frequency = 334

22,1 Frequency = 93

Stress pattern 3B Frequency = 93

1a	absolute	advertise	aggravate	altitude
	antelope	antiquate	appetite	atmosphere
	attitude	calculate	candidate	centipede
	concentrate	cultivate	envelope (N)	estimate(Vb)
	fascinate	illustrate	indicate	institute
	irrigate	multitude	sensitize	substitute
	vaccinate	ventilate	vestibule	
1b	alternate(Vb)	artichoke	circulate	fertilize
	fumigate	harmonize	hibernate	hurricane
	longitude	marmalade	merchandise (P)	
	organize	persecute	porcupine	turpentine
	vaporize			
2	certify	crucify	dignified	fortify
	justify	lullaby	magnify	multiply
	mummify	notify	occupy	purify
	terrify	testify		
3	alphabet	architect	autograph	Bethlehem
	caravan	consequence	daffodil	difficult
	frankinsense	paragraph	parallel	penmanship
	phonograph	photograph	substrahend	thermostat
4	anteroom	astronaut	barbecue	buffalo
	bungalow	celluloid	chickadee	corduroy
	dinosaur	indigo	marigold	mistletoe
	nowadays	parakeet	peekaboo	piccolo
	somersault	uniform	universe	yesterday

22,2 Frequency = 130

Stress pattern 3A Frequency = 130

1	allergy	ancestry	artery	battery
	balcony	century	charity	company
	contrary	cranberry	currency	dignity
	gallery	industry	mercury	mulberry

	pharmacy	primary	prophecy	possibly
	purity	rickety	rotary	summary
	tendancy	terribly		
2	article	barnacle	capable	constable
	follicle	horrible	icicle	multiple
	notable	particle	pinnacle	popsicle
	portable	possible	rectangle	sensible
	spectacle	terrible	vehicle	
3	admiral	cannibal	carnival	funeral
	hospital	interval	numeral	practical
	principal	sentinel	terminal	vertical
4	ancestor	carpenter	character	circular
	corridor	cucumber	emperor	juniper
	mariner	messenger	milliner	officer
	passenger	singular		
5	algebra	Florida	formula	gondola
	orchestra	taffeta		
6	abdomen(P-AS)	bacterin	badminton (P)	bulletin
	cardigan	cinnamon	coconut	copilot
5	emphasis	garrison	invalid (P-AS)	mannikin
	moccasin	octopus	paraffin	Puritan
	stewardess	vitamin	wilderness	
7	accident	afterward	afterwards	applicant
	compliment	consonant	continent	excellent
	immigrant	implement	impudent	incident
	innocent	instrument	ornament	pharmacist
	permanent	sentiment	supplement	testament
8	accurate	adjective	alternate(Aj)	ambulance
	armistice	confidence	countenance	estimate(N)
	juvenile(P)	opposite	ordinance	orphanage
	talkative	transitive		

22,3 Frequency = 91

Stress pattern 3C Frequency = 91

1	Alaska	alfalfa	angora	antenna
	bandanna	bermudas	chinchilla	crayola
	diploma	gorilla	saliva	vanilla
	veranda	victrola	umbrella	
2	another	December	disaster	divisor
	embroider	encounter	endeavor	November
	October	remainder	semester	September
	suspenders	together		
3	Chicago	contralto	flamingo	kimono
	memento	pimento	potato	tobacco
	tomato	tornado	torpedo	volcano

Fourth-Year Word List: Frequency = 1148

Block 23: Frequency = 153

23,1 Frequency = 73

A29 Frequency = 29

1a	baste	haste	paste	taste
	waste			
1b	distaste	hasten	hastily	hasty
	pasteboard	paster	pastry	tasteless
	tasty	wastebasket		
2	arrange	arrangement	change	changeable
	exchange	mange	mangy	range
	ranger	strange	stranger	
3	angel	danger	endanger	

A24 Frequency = 44

1	wad	wan	wand	want
	wash	wasp	watch	
2	swamp	swan	swat	
3	flyswatter	swampy	swatter	unwashed
	washbasket	washer	Washington	washtub
	watchdog	watchmaker	watchman	whitewash
4	swallow	waffle	wallet	wallop
	walnut	walrus	wampum	wander
	wanderer	water	waterer	waterfall
	waterway	watery	wigwam	
5	quality	quantity	squash	squad
	squander	squash	squat	

23,2 Frequency = 49

I35 Frequency = 22

1a	mi	ski	ti	
1b	confetti	Hopi		
2	chlorine	marine	quarantine	ravine
	sardine	submarine	tangerine	vaccine
3	casino	farina	handicap	mobile(P)
	petticoat	pinochle	police	policeman
	polliwog			

I25 Frequency = 27

1	billion	communion	million	millionaire
	onion	pavillion	rebellion	reunion
	stallion	union		

4	abandon	accustomed	appendix	asbestos
	bronchitis	domestic	elastic	electric
	embarrass	fantastic	galoshes	gigantic
	heroic	historic	horizon	indignant
	interpret	majestic	molasses	narcissus
	opposum	opponent	persimmon	romantic
	tobaggan	transparent		
5	apostle	apparel	assemble	eternal
	illegal	immortal	orchestral	resemble
	utensil			
6	adhesive	advantage	assembly	canary
	committee	dependence	determine	employee
	infertile	intestine	percentage	productive
	remembrance	resemblance	tomorrow	

22,4 Frequency = 20

Stress pattern 3D Frequency = 20

1	absentee	buccaneer	chimpanzee	engineer
	guarantee	halloween(P)	velveteen	
2	bayonet (AS)	clarinet	contradict	correspond
	entertain	impolite	intercede	interfere
	interrupt	introduce	kangaroo	mandolin
	mayonnaise (AS)			

	2	behavior	junior	savior	senior
	3	ammonia	begonia	magnolia	petunia
	4	interview	review	view	viewer
	5	brilliant	convenience	convenient	genial(P)
		peculiar			

23,3 Frequency = 31

Y11 Frequency = 8

linotype	lyre	paralyze	style
teletype	type	typewrite	typewriter

Y13 Frequency = 6

asylum	dynamite	papyrus	stylish
typist	tyrant		

Y15 Frequency = 7

antonym	Brooklyn	Egypt	gym
lynch	lynx	myth	

Y16 Frequency = 10

crystal	gymnastics	gypsy	hypnotize
pygmy	syllable	symbol	sympathy
symphony	system		

Block 24: Frequency = 224

24,1 Frequency = 50

Four-syllable compounds Frequency = 12

brother-in-law	dictatorship	forget-me-not	huckleberry
jack-o-lantern	merry-go-round	morning-glory	relationship
San Francisco	self-reliance	sister-in-law	United States

-ing Frequency = 7

appetizing	embarrassing	magnifying	merrymaking
self-governing	understanding	undertaking	

-y Frequency = 1

difficulty

-er Frequency = 6

discoverer	fertilizer	multiplier	overseer
photographer	undertaker		

-or Frequency = 8

captivator	cultivator	incubator	insulator
numerator	percolator	supervisor	ventilator

-ed Frequency = 2

complicated	disappointed

-ly Frequency = 14

1	apparently	contentedly	disorderly	exceedingly
	excitedly	extensively	intimately	personally
	practically(P)		respectively	unwillingly
2	respectfully	successfully	wonderfully	

24,2 Frequency = 89

E38 Frequency = 38

1a	exit	exile	Texas	
1b	exercise	execute	flexible	Mexican
	Mexico			
2a	clever	crevice	devil	ever
	levee	lever	level	levy
	never	seven	seventh	sever
2b	devastate	eleven	eleventh	evergreen
	evermore	evidence	evident	forever
	however	revenue	seventeen	seventeenth
	seventy	whenever	whichever	
2c	everlasting	evidently	Beverly Hills	

I38 Frequency = 22

2a	civic	civics	civil	forgive
	give	giver	live(Vb)	liver
	quiver	river	rivet	shiver
	sliver	shortlived	shrivel	vivid
2b	civilize	cod-liver	deliver	forgiveness
	liverwurst	privilege		

2a	profit	profiteer	vomit		
2b	deposit	depositor			
3	abolish	astonish	polish		
4	solid				

E28 Frequency = 9

1a	relic			
1b	athletic	athletics	pathetic	
2a	credit			
2b	editor	inherit		
3	cherish	perish		

24,4 Frequency = 18

General primary vowel Rule 27 Frequency = 18

1	humanity	humidity	morality	prosperity
	rapidity	vitality		
2	activity	captivity	gravity	hostility
	nobility			
3	ability	capacity	facility	posterity
	simplicity	stability	vicinity	

Block 25: Frequency = 248

25,1 Frequency = 62

-tion Frequency = 62

1a	interjection	intersection	reconstruction	
1b	arbitration	circulation	compensation	constipation
	constitution	contribution	corporation	cultivation
	distribution	fascination	illustration	institution
	irrigation	navigation	numeration	vaccination
	ventilation			
2a	annexation	cancellation	confirmation	information
	transportation			
2b	admiration	combination	conservation	consolation
	conversation	exploration	inspiration	invitation
	observation	perspiration	respiration	
3	composition	disposition	exposition	opposition
4	application	exclamation	explanation	inflammation
	introduction	occupation		
5	definition	preparation	preposition	preservation
	proposition	recitation	reputation	reservation
	resolution	revelation	revolution	

A38 Frequency = 21

1a	axis	axle	taxi	
1b	saxophone	taxicab		
2a	cavern	gravel	have	ravel
	savage	travail(P)	tavern	travel
	travels			
2b	avalanche	avenue	cavity	davenport
	lavender	navigate	scavenger	

O?? Frequency = 8

1a	foxy	oxen	
2a	novel	proverb	province
2b	poverty	providence	novelty

24,3 Frequency = 67

A28 Frequency = 19

1a	magic	magical	panic	
1b	chromatic	dramatic	dramatics	mechanic
	volcanic			
2a	habit	inhabit		
3	banish	radish	Spanish	vanish
4	acid	invalid (meaning "not valid")		
	rapid	rapidly	rapids	

I28 Frequency = 17

1a	clinic	mimic		
1b	artistic	pacific	terrific	
2a	limit	spirit	spirited	visit
	visitor			
2b	prohibit	solicit		
3	diminish	finish	unfinished	
4	frigid	timid		

Y28 Frequency = 1

1a	physic	

O28 Frequency = 21

1a	chronic	comical	frolic	phonic
	phonics	tonic	topic	tropic
	tropical			
1b	alcoholic	atomic	masonic	

	6	ammunition	aviation	constellation	jubilation
		jurisdiction			

25,2 Frequency = 65

I26 Frequency = 30

1a	dial	diet	giant	liar
	lion	riot		
1b	briar	friar	quiet	science
	trial	triumph		
2a	quietly	quietness	sealion	sundial
	triumphant			
2b	diagram	diary	iodine	liable
	pioneer	scientist	triangle	viaduct
	violate	violence	violent	violet
	violin			

Y26 Frequency = 2

cyanide	hyena

U26 Frequency = 12

1	bluish	bruin	duet	fluid
	ruin	suet	truant	
2	annual	annually(P)	duofold	influence
	suicide			

E26 Frequency = 15

1	create	meow		
2	area	cereal	creation	idea
	leotard	meteor	museum	peony
	preamble	prearrange	reaction	rodeo(AS, P)
	theater			

O26 Frequency = 4

oasis	poem	poet	poetry

A26 Frequency = 2

gaity	mosaic

25,3 Frequency = 40

I36 Frequency = 38

1	fiord			
2	curio	folio	polio	portfolio
	radio	studio		
3	calcium	helium	medium	premium
	radium	stadium		
4	alien	audience	barrier	champion
	chariot	foliage	guardian	Indian
	lariat	maniac	median	oriole
	period	radiant	radius	ruffian
	serial	terrier	viola	warrior
	zinnia	zodiac		
5	championship	hurriedly	radiator	

Y36 Frequency = 2

embryo	Tokyo

25,4 Frequency = 33

A12 Frequency = 18

1	able	cable	cradle	fable
	gable	ladle	maple	sable
	stable	staple	table	
2	enable	tablecloth	tablespoon	tablespoonful
	tableware	timetable	unable	

I12 Frequency = 9

Bible	bridle	entitled	idle
idleness	idly	rifle	title
trifle			

Y12 Frequency = 2

cycle	motorcycle

O12 Frequency = 2

noble	nobleman

U12 Frequency = 2

bugle	bugler

25,5 Frequency = 48

E14 Frequency = 20

1	reflect	reflection	refrain	refresh
	refreshment	regret	replace	reply
	retract	retreat		
2	cathedral	declare	decline	decrease
	deprive	eclipse	Negro	secret
	secretly	zebra		

I14 Frequency = 9

biplane	library	microphone	microscope
migrate	migration	nitrate	tigress
vibrate			

Y14 Frequency = 4

cyclone	cypress	hydrant	hydrogen

A14 Frequency = 8

April	apron	fragrance	fragrant
patriot	patriotic	patronize(P)	sacred

O14 Frequency = 4

okra	only	proclaim	program

U14 Frequency = 3

duplicate(P)	lubricate	nutrition

Block 26: Frequency = 316

26,1 Frequency = 37

-able Frequency = 19

1	accountable	agreeable	available	comfortable(P)
	dependable	enjoyable	favorable	obtainable
	profitable	reasonable	remarkable	respectable
2	noticeable	serviceable		
3	adorable	desirable	excusable	valuable(P)
4	reliable			

-ment Frequency = 5

advertisement		astonishment	
disappointment		embarrassment	
entertainment			

-al Frequency = 8

1	continental	departmental	electrical	historical
	oriental			
2	congressional	emotional	professional	

-ness Frequency = 2

effectiveness	unselfishness

-ary Frequency = 2

dictionary	missionary

-ist Frequency = 1

violinist

26,2 Frequency = 36

IE12 Frequency = 13

1	birdie	brownie	cookie	kiddie
	laddie	lassie		
2	caddie	collie	coolie	hippie
	kewpie	mashie	prairie	

EY17 Frequency = 23

1	mousey	pulley		
2	alley	barley	chimney	donkey
	galley	hockey	honey	jockey
	money	monkey	parley	parsley
	trolley	turkey	valley	volley
3	honeybee	honeydew	honeymoon	honeysuckle
	volleyball			

26,3 Frequency = 10

EI10 Frequency = 10

bargain	captain	certain	certainly
curtain	fountain	mountain	mountainside
uncertain	villain		

26,4 Frequency = 18

EA33 Frequency = 18

1b	earn	earth			
2b	heard	learn	pearl	search	
	yearn				
4a	hearse				
6a	earthquake	earthworm	searchlight		
6b	pearly				
7a	early	earnest	earthling		
7c	rehearse				
8b	earnestly	rehearsal			

26,5 Frequency = 54

IE12 Frequency = 39

2b	chief	pier	thief		
6a	field	fiend	niece	piece	
	shield	siege	yield		
4b	brief	grief	shriek		
5a	grieve	priest			
5b	fierce	pierce			
6a	briefcase	cornfield	crosspiece		
6b	chiefly	fielder	fiercely		
7c	achieve	apiece	belief	believe	
	cashier	chieftain	frontier	hygiene	
	relief	relieve	wiener		
8a	battlefield	makebelieve			
8b	disbelieve	left-fielder	out-fielder		

EI10 Frequency = 15

2b	sheik				
4a	weird	seize			
1a	either(P)				
7c	caffeine	ceiling	conceit	deceit	
	deceive	neither(P)	perceive	protein(P)	
	receive				
8b	receiver	deceitful			

26,6 Frequency = 28

EY10 Frequency = 9

2a	hey	they	whey
3b	grey	prey	
6a	greyhound		
7b	obey		
8b	surveyor	disobey	

EI29 Frequency = 14

1	neigh	sleigh	weigh	
2	eight	freight	weight	
3	reign	reins	vein	
4	bobaleigh	eighteen	eighteenth	eighth
	eighty	neighbor	neighborhood	neighboring
	overweight	reindeer		

26,7 Frequency = 125

-ous Frequency = 39

1	dangerous	humorous	joyous	marvelous
	mountainous	poisonous	prosperous	
2	adventurous	famous	grievous	nervous
	porous			
3	furious	glorious	industrious	injurious
	mysterious	studious	various	victorious
4	monstrous	wondrous		
5	courteous	curious	enormous	jealous
	numerous	obvious	previous	rebellious
	serious	tedious	treacherous	tremendous
6	furiously	jealousy	joyously	previously
	seriously			

OE31 Frequency = 37

2b	touch	young		
6a	touchdown			
6b	touched	touching		
7c	country	couple	courage	cousin
	double	doublet	flourish	journal
	journey	nourish	southern	trouble
	youngster			
8a	double-cross	crosscountry	troublesome	
8b	discourage			
9c	courier	encourage	tambourine	tournament
10b	discouragement			

OU35 Frequency = 29

2b1	dough	soul	though	
1i	four	pour		
4a1	mould			
4a11	court	fourth	gourd	mourn

5b11	course	source			
6ai	doughnut				
6aii	courthouse	courtyard	fourscore	fourteen	
	fourteenth	mournful	mourning		
7bi	borough	thorough			
7ci	boulder	moulding	poultry	shoulder	
8bi	thoroughly				
9ci	cantaloupe	throughbred			

OU33 Frequency = 19

OU33 2ai	you				
2bi	soup				
2bii	tour	your			
4ai	route(P)	wound(N,V)	youth		
4aii	yours				
4bi	group	through			
5ai	troupe				
6ai	throughout				
6aii	yourself				
7ci	cougar	coupon			
7cii	detour	tourist			
9bi	caribou				
9ci	souvenir				

OU34 Frequency = 11

1b	ought			
2b	bought	fought	nought	sought
	thought			
4b	brought			
6a	forethought			
6b	thoughtful	thoughtless		
8b	thoughtfulness			

26,8 Frequency = 8

UI31 Frequency = 8

4a	build	built		
6b	builder	rebuild	rebuilt	building
7c	biscuit	circuit		

Block 27: Frequency = 207

27,1 Frequency = 19

un- Frequency = 8

1	uncivilized	unconnected	unexpected	unlimited
2	uneventful	unimportant	unmerciful	unsuccessful

in- Frequency = 6

	inattention	inattentive	inconvenient	independence
	independent	indigestion		

dis- Frequency = 3

disappearance	disinfectant	disqualify	

mis- Frequency = 2

misunderstand	misunderstood

27,2 Frequency = 71

Stress pattern 4A Frequency = 61

1a	Arabia	bacteria	diphtheria(P)	malaria
1b	adverbial	centennial	colonial	congenial
	imperial	industrial	material	memorial
	perennial			
1c	appropriate(Aj)		immediate	librarian
2	aquarium	geranium	gymnasium	linoleum
	petroleum			
3a	exterior	inferior	interior	superior
3b	ambassador	proprietor	rectangular	triangular
3c	artillery	dispensary	distillery	
4	emergency	necessity	society	transparency
	variety			
5	coincidence	equivalent	experience	intelligence
	intelligent	obedience	obedient	
6	impossible	inflammable	invincible	responsible
7	affectionate	aluminum	arithmetic	asparagus
	declarative	diversify	extravagant	identical
	intransitive	Jerusalem	parenthesis	peninsula
	receptacle			

Stress pattern 4b Frequency = 10

1	abbreviate	assassinate	communicate	inaugurate
	incorporate	interrogate	intoxicate	investigate
2	identify	insecticide		

27,3 Frequency = 23

Stress pattern 4C Frequency = 23

1	automatic	economics(P)	pancreatic	prehistoric
	scientific	supersonic	sympathetic	systematic
2	antitoxin	Arizona	carbohydrate	correspondence
	fundamental	horizontal	incandescent	influenza
	interference	interurban	laryngitis	locomotive
	Mississippi	multicolored	tonsilitis	

27,4 Frequency = 14

Stress pattern 4D Frequency = 14

1	customary	ordinary	stationary	temporary
2	alligator	architecture	aviator	cauliflower
	dandelion	dormitory	kindergarten	millimeter
	territory	testimony		

27,5 Frequency = 7

Other four-syllable words Frequency = 7

accuracy	automobile	charitable	navigable
meteorite	marionette	multiplicand	

27,6 Frequency = 73

E32 Frequency = 51

1a	bakery	bravery	every	grocery(P)
	livery	mystery	nursery	robbery
	scenery	shrubbery	silvery	slavery
	slippery			
1b	conference	difference	different	reverence
	reverent			
1c	evening	fattening	offering	
1d	average	bachelor	beverage	desperate
	interest	jeweler	jewelry	opera
	pickerel	porcelain	several	temperate
	traveler	vaudeville		
2	desparately	differently	everyday	everything
	grocerman(P)	indifferent	interesting	
3	circumference	deliberate(A))	delivery	discovery
	embroidery	perfumery	recovery	refinery
	temperature			

032 Frequency = 13

1a	factory	hickory	history	ivory
	victory			
1b	Catholic	corporal	favorite	sophomore
2	comfortably(P)		elaborate(A))	
3	laborato.y	satisfactory		

A32 Frequency = 6

1	boundary	diamond	diaper
2	elementary	frantically	Niagara Falls

132 Frequency = 3

1	aspirin	cardinal
2	parliament	

Section V

SEQUENCED IRREGULARLY-SPELLED WORDS

Irregularly-spelled words are those words in which there is at least one case of a spelling-to-sound correspondence not included in the present set of correspondences. This section contains a sequenced listing of these words.

The sequence of irregularly-spelled words follows the rule sequence of Section II (summarized in Appendix C) and indicates the first point at which introduction of these words is recommended. (Rules for which there are no corresponding irregularly-spelled words are not listed.) For the most part the words in this section are sequenced with the correspondence rules to which they are exceptions or to which they are similar. In no case, however, are irregularly-spelled words introduced until all their component regular correspondences have been introduced.[1]

In this section, words are grouped within each rule according to their irregular correspondence or, in a few cases, by category (e.g., numbers). The irregular correspondences are indicated by the standard notation (Hardiamty et al., 1969), i.e., spelling to the left of the arrow, pronunciation to the right, environment noted where needed; e.g., o → [u]. The irregular grapheme units are underlined; e.g., do, to.

[1] In the development of a reading program it may be necessary to introduce some irregularly-spelled words at an earlier point, to allow naturalness and interest in written material.

Recommended Order of Instruction for Irregularly-Spelled Words in First Year: Frequency = 38

Block 1

1,1

A15 a → [ə]: a

I15 I → [ay]: I

1,3

S10 s → [z]: as is

1,5

B10 a → [ə]: bass (in music)

1,6

H10 h → [ay]: hi
s → [z]: has his

O15 o → [o]: O
o → [u]: do to

Block 2

2,1

TH13 e → [ə]: the

Block 3

3,1

EE10 ee → [ɪ], [ɛ]: been

3,2

Y19 ye → [ay] / __ #: bye bye-bye dye
lye rye
eye → [ay]: eye

Block 4

4,1

F10 a → [a]: aha fa ha haha
la ma mama mamma (P)
pa papa (P)
(in mamma and papa, one of the a's may be pronounced [ə], Rule A17)

aa → [a]: baa

musical terms:

irregular: e → [e]: re
o → [o]/ __ l: sol
a → [a]: fa la

regular by Third-Year and Fourth-Year rules:

do mi ti

W10 a → [ə], s → [z]: was
a → [æ]/w __ : swam
i → [ɪ]/ __ nd#: wind (N)
o → [u]: wolf

Recommended Order of Instruction for
Irregularly-Spelled Words in Second Year: Frequency = 111

Block 5

5,1

Compounds

i → ɪ / __ nd#: windmill
o → [u]: into onto

Block 6

6,1

A11 are → [ar]: are

I11 cardinal numbers:

irregular: one [wən]
two [tu]

regular by Fourth Year rules: four seven eight

(regular by present rules: three five six
nine ten)

6,2

E11 e → [ə]: crepe
ere → [ər]: were

Block 7

7,1

C11 o → [wə]: once

Block 8

8,2

A16 a → [ə]: grandma(P) grandpa(P)
(also n → [m], d → ∅, a → [ə])

Block 9

9,2

E21 th → [θ] / __er: ether panther

I21 t → [tɪ]: T-shirt

Block 10

10,1

E17 o → [o]: swollen
o → [ɪ]: women

A17 o → [ʊ]: woman
e → [e]: mesa

017 ordinal numbers:

irregular: e → [ɛ] / __CV: second
i → [ay]: ninth

regular by Fourth Year rules: fourth seventh eighth
(regular by present rules: first third
fifth sixth tenth)

10,2

Y17 i → [ɪ] / __nd: windy
a → [ɛ]: any many
th → [ð]: worthy
u → [ɛ]: bury
e → [ɪ]: pretty

LE22 c → [s] / __C: muscle

10,4

U11 s → [ʃ]: insure sure surely

A25 toward → [tord]

10,5

A17 a → [ə]: garage (P) (also g → [ʒ])

U17 o → [u]: undo unto

Block 11

11,1

NG10 ng → [ŋ]: gingham (also h → ∅) length
strength strengthen
e → [ɪ]: England(P) English(P)

11,2

CH10 a → [ə], ch → ∅: yacht

11,3

WH10 wh → [h]: whole wholesale
also o → [u]: who whom
ere → [ɛr]: ere there therefore
where
a → [ə]: what

11,5

GG10 gg → [gJ] (Rules G12, G11): suggest

Block 12

12,1

AY10 wednes → [wɛnz]: Wednesday
x → [ɛks]: X-ray
aye → [e], [ay]: aye(P)

12,2

ea → [e]: beefsteak break breaker
great greatly steak
ea → [a] / __r: heart hearty

12,3

0011 u → [u]: cuckoo

0012 oo → [ʊ]: blood blooded bloody
flood
oo → [o] / __r: door doorstep doorway
floor indoor
ye → [ay] / __#: goodbye

Block 13

13,1

031 o → [u] / __v: improve move prove
f → [v]: of
wh → [h]: wholesome
one → [wən]: someone
a → [ə]: somewhat
ere → [ɛr]: somewhere

U31 s → [š]: sugar

13,2

A23 a → [æ] / __ll#: shall
z → [s]: waltz

023 o → [ɔ], [a]: begone golf gone

13,3

024 o → [o] / __st: almost (also all → al [ɔl])

host most mostly
post postal poster
postman

o → [o] / __l: control holster patrol
o → [o] / __ss: gross
o → [o] / __th: both

Block 14

s → [z]: cleanse cleanser clumsy
cosmos husband muslin
pansy plasma Thursday
wisdom
a → [ɔ] / __l: false

Recommended Order of Instruction for
Irregularly-Spelled Words in Third Year: Frequency = 634

Block 15

15,2

eye → [ay]: eyeball eyebrow eyelash eyelid
pinkeye
ea → [e]: breakdown daybreak greatness yea
ea → [ə] / _r: hearth
o → [o] / __st: hostess lamppost postage postcard
postpone postscript topmost utmost
o → [u] / __v: approve movement
oo → [o]: doorbell doorman
oo → [ə]: bloodshed
s → [z]: absorb dismal observe
n → [ŋ] / __ ({[g] [k]}): engage incline include inquire
ng → [ŋ] / __...: lengthwise
V → [ṽ] / __Ce#: allege comrade vineyard
e → [e]: fete
ere → [ɛr]: elsewhere
i → [ɪ] / __nd: windpipe
i → [ay]: pint
a → [ɔ] / __l: falsehood
a → [æ] / __Ce#: forbade
ge → g [j]: judgment
rh → [r]: rhinestone
whole + ly → wholly (wh → [h]; o [o])
one → [wən]: oneself
catsup → [kɛ̌ǎəp]
queue → [kyu]

Block 16

16,1

AI10 ai → [ɛ]: again against said
ai → [æ]: plaid
ai → [ay]: Kaiak

16,2

OU10 oo → [o]: outdoor
oo → [ə]: bloodhound

16,3

OE10 oe → [u]: canoe horseshoe shoe shoehorn shoelace shoestring snowshoe

OA10 oa → [ɔ]: abroad broad broadcast broadcloth broadway

16,4

AW10 er → [r]: drawer

AU10 au → [æ]: aunt(P) aunty (P)
s → [z]: Santa Claus

16,6

UE10 ue → u [u]: truth truthful
ue → ∅; ng → [ŋ]: tongue
s → [z]: Tuesday

EW10 ew → [o]: sew sewer
eu → [(y)u]: Europe grandeur neutral

Block 17

17,1

a → [ɛ]: anyhow anymore anyone anything
anytime anyway anywhere (also ere → [ɛ])
o → [u]: saleswoman womanhood
o → [o] / __st: postmaster postmistress
o → [o] / __l#: patrolman self-control
ye → [ay]: rock-a-bye
oo → [ə]: bloodthirsty
all → al [ɔl]: already
e → [ɪ]: Englishman

17,2

eye → [ay]: blue-eyed cross-eyed eyeglasses
ye → [ay]: dyewoods
oo → [o]: outdoors out-of-doors (also f → [v])
all → al [ɔl]: always

irregular third person singular forms: does, goes

o → [u]: doings
o → [ʊ]: wolves
ee → [ɪ]: breeches
s → [z]: measles
towards → [tordz]

17,3

-er oe → [u]: shoemaker
-ed ea → [ə] / __r: downhearted kindhearted
-ly ue → u [u]: truthfully
ea → [ə]: heartily

Block 18

18,1

E13 e → [ɛ] / __CV:

decade deluge herald heron
legend lemon lemonade medal
melon menace metal pedal
peril petal preface rebel (N)
record(N) refuge second secondhand
senate sheriff tenant very
e → [ɪ] / __ch V: recharge
n → [ny]: señor (P) (also e → [e]: señor)
o → [u]: remove

013 o → [ə] / __CV

anybody (also a → [ɛ]) bodily body
comet copy model modern
modest nobody olive process
produce(N) product project(N) proper
properly robin somebody volume
oe → [u]: overshoe

A13 a → [æ] / __CV:

agate	atom	baboon(P)	balance
cabin	cafe (also e → [ə]/ __ #)		camel
chapel	damage	dragon	fragile
famine	granite	Latin	madam
malice	manage	manager	palace
panel	patent	planet	salad
satin	Saturn	shadow	snapdragon
strata	taboo	talent	talented
trapeze(P)	wagon	wagonload	
vacuum (also uu → [yu])		valor	value

a → [ə]: amen drama lava llama
plaza

I13 i → [ɪ] / __CV:

city	figure	image	lily
linen	liquid	lizard	minute(N)
minuteman	primer	pity	sinew
spigot	spinach	tribute	vigor
widow	wizard		

iron → [ˈyərn]: iron flatiron

U13 u → [ə] / __CV: suburb study
rh → [r]: rhubarb

18,2

S20 s → [s] /V__V:

abuse (N)	aside	basin	basis
bison	close (Aj)	closely	crusade
crusader	dose	excuse (N)	geese
mason	nuisance	promise (also o → [ə] / __CV)	
purpose	sausage	usage	use(N)
useful	useless	vise	
also: oi → [ə]:		porpoise	tortoise

V → [v̆] / __CV

chisel	closet	desert (N)	prison
prisoner	presence	present (N)	presently
risen	rosin	visit	

o → [u]: lose whose (also wh → [h])
o → [ʊ]: bosom (P)
u → [ɪ]: business (also i → ø) busily busy
n → [ŋ]: / __ [k]: enclose inclose
ss → [z]: dessert dissolve possess scissors

S21 s → [z] /ea__e: disease displease ease
please tease
s → [z] /ou__e: arouse house (Vb) rouse
s → [z] /oo__e: choose
a → [æ] / __CV: papoose

18,3

A22 y + age → iage [iy̆]: carriage marriage

18,4

025 all → al [ɔl]: also
ere → [ɛr]: nowhere
u → [(y)u] / #
flu menu (also e → [ɛ] / __CV)

Block 19

19,1

-ment	a → [æ] / __CV:	management	
	ue → u [yu]:	argument	
	o → [u] / __v:	improvement	
-ive	s → [s] /V__V:	abusive	
-ness	ue → u [u]:	truthfulness	

19,2

124 + GH10

all → al [ɔl]: alright
eye → [ay]: eyesight
o → [ə] / __CV copyright

GH10

gh → [g] /#__: ghost ghostly
gh → [f]; au → [æ]: draught laugh laughingly
laughter

H20 ah → [ə] / __#: ah bah hurrah
rah rajah (also a → [ə]) yah
eh → [e], [ɛ]: eh
oh → [o]: oh
o → [ə] / __CV: homage honest honestly
honor

19,3

K20 oo → [o]: doorknob
ow → [a]: knowledge

G20 i → [ə] /__gn#: ensign
o → [o]: cologne
ch → [š], a → [e], [gn] → n: champagne

W20 w → ∅; answer sword

19,4

B20 b → ∅ /__t#: debt doubt doubtful doubtless
i → [ay]: climb
o → [o]: comb
o → [u]: tomb

19,5

L20 ould → [ʊd]: could should would
a → [a] / __lm: almond calm palm
l → ∅: Lincoln solder
colonel → [kə́rnəl]

T20 t → ∅: chestnut mortgage
ot → [o]: depot
et → [e]: ballet buffet valet (also a → [æ] /__CV)

19,6

U20 i → [ɪ] /__CV: guinea guitar
u → ∅: disguise
u → [w] /...g__: jaguar (also a → [æ]/__CV) language
penguin
u → [w]: persuade
uy → [ay]: buy buyer guy
ue → ∅ /g__#: league plague rogue
que → [k] /__#: mosque plaque (also a → [æ] /__CV)
qu → [k]: conquer croquet (also et → [e] /__#)
turquoise

also V → [V̆] /__CV:

Other silent letters

d: d → ∅ /#a__j: adjoin adjust adjustment
d → ∅: handsome
n: n → ∅/m__#: autumn condemn damn
also o → [a] /__CV: column solemn solemnly

p: p → ∅ /__b; oa → [o]: clapboard cupboard
p → ∅ /#__C(C ≠ r, l); a → [ə] /__lm: psalm
corps → [kor]

Block 20

20,1

-y V → [V̆] /__CV: honesty sinewy
s → [š]: sugary
-ful i → [ɪ] /__CV: pitiful
-al o → [u] /__v: approval removal
u → [ɛ]: burial (y → i [ɪ])
-able o → [u]/__v: movable (optional ∅)

20,2

PH10 V → [V̄] /__phV: cipher gopher siphon
trophy
pph → [f]: sapphire

CH31

ache → [ək]: ache backache earache
headache toothache stomachache
V → [V̆] /__CV: chemist monarch monarchy
scholar
n → [ŋ] /__ch: anchor
i → [ay]: Christ
t → ∅; Christmas
choir → [kwayr]
ch → [š]: chamois (also a → [æ]/__CV; ois → [ɪ])
chauffeur (also au → [o]; eu [ə]) chef
chute mustache
also et → [e]: chalet (also a → [æ] /__CV)
crochet (also o → [o]/__chV) sachet

20,3

TH12

V → [ð̄]/__the#: bathe clothe
a → [a]: father forefather grandfather stepfather
th → [ð]: clothing (also o → [o]/__thV) fathom heathen
smooth smoothly swarthy
clothes → [kloz]: clothes clothesbasket clothesline
clothespin underclothes
th → ∅: isthmus

Block 21

21,1

dis-	o → [ə] / __CV:	dishonest	dishonor
re-	o → [ə] / __CV:	remodel	

21,2

-tion	i → [ɪ] / __tion:	addition edition	ambition partition	condition position
	a → [æ] / __tional:	national	rational	

21,3

-sion	i → [ɪ] / __CV:	vision	precision

21,4

-ture	a → [æ] / __CV:	stature	natural

Block 22

22,1

Stress pattern 3B

V → [V̆] / __CV

anecdote	aqueduct	bobolink	calico
celebrate	criticize	crocodile	decorate
dedicate	democrat	demonstrate	dividend
dominate	domino	dramatize	elevate
generate	gratitude	hemisphere	hesitate
holiday	imitate	kerosene	latitude
manicure	manuscript	memorize	moderate (Vb)
modify	monogram	nominate	operate
pacify	penetrate	populate	ratify
recognize	regulate	ridicule	satisfy
Saturday	separate(Vb)	sterilize	stratosphere
telegram	telegraph	telephone	telescope
tomahawk	trapezoid	vagabond	valentine
	paradise	parasite	parasol
	parachute		
	nightingale		

s → [s] /V__V:
ch → [č]:
n → [ŋ]/__[g]:
o → [ɔ]: alcohol
a → [ɔ]: almanac
a → [æ] / __CV; ue → ∅ /g__#: catalogue
ae → [ɛ]: aeroplane
au → [aw]: sauerkraut
reservoir → [rɪ́zəv(w)ar] (P)

22,2

Stress pattern 3A

V → [V̄] / __CV

abacus (P,AS)	animal	banister	benefit
cabinet	calendar	Canada	canopy
capital	capitol	chemical	chemistry
cholera	citizen	colonist	colony
comedy	criminal	decimal	definite
delicate	diligent	document	ebony
elegant	element	elephant	enemy
energy	feminine	ganary	gravity
halibut	hominy	Italy	janitor
liberty	liniment	majesty	medical
medicine	melody	mineral	minister
miracle	misery	moderate(Aj)	monitor
monument	negative	pelican	platinum
policy	popular	positive	predicate
president	primitive	probable	probably
prominent	property	regiment	register
regular	relative	remedy	residence
resident	senator	similar	skeleton
specimen	tapestry	tenement	vanity
vinegar	visible	vocative	
e → [ɛ] / __CV; e → [ɪ] / __∅:		recipe	
re → [ər]:	massacre		
a → [ɛ]:	marshmallow		
s → [s] /V__V:	fuselage (P)	pleurisy (also eu → [u])	
s → [z]; p → ∅ / __b:	raspberry		

22,3

Stress pattern 3C

V → [V̆] / __CV:

abacus (P, AS)	alpaca	banana	composite
consider	continue	contribute	develop
distribute	enamel	exquisite	imagine
imprison	improper	pajamas	sombrero
soprano			
e → [ɪ] / __∅:	adobe	coyote (P)	
also a → [ə]:	karate	serape	tamale
ow → [ə]:	acknowledge		
d → ∅ /#a__j:	adjacent		
all → al [ɔl]:	almighty		

c → ∅: antarctic acquaintance
u → [w] /...g__: distinguish
o → [ɔ]; g → ∅; a → [ɪ]: bologna
ieu → [u]; e → [ɛ] /__CV: lieutenant

22,4

Stress pattern 3D

V → [V̆] /__CV:

cigarette matinee (also ee → [ɔ]) recollect
recommend referee refugee volunteer
qu → [k]: masquerade
que → [k] /__∅: picturesque
s → ∅: Illinois (P)

Block 23

23,1

A29 a → [ɔ] /__CC: chamber

A24 ea → [e]: breakwater

23,2

I35 V → [V̆] /__CV: chili gasoline khaki (also kh → [k])
magazine vasoline
s → [s] /V__V: valise
ue → ∅ /g__∅: fatigue
que → [k] /__∅: antique unique
qu → [k]: mesquite mosquito
u → [w]: suite
ch → [š]: machine
gh → [g]: spaghetti
zz → [ts]: pizza
ll → [y]: tortilla
j → [h], e → [ɔ]: frijoles
ai → [ay]: Hawaii

I25 h → ∅: dahlia (or a → [ɔ]; h → ∅: dahlia)
shion → [šən]: cushion fashion old-fashioned
p → ∅ /∅__C (C ≠ r, l); eu → [u]: pneumonia
V → [V̆] /__CV: companion dominion familiar
opinion spaniel Virginia

23,3

Y11 rh → [r]: rhyme
a → [ə] /__CV: analyze

Y13 y → [ɪ] /__CV: chrysalis cylinder hypocrite
myriad physical pyramid
sycamore synagogue
(also o → [ə], [ɔ]/__CV;
ue → ∅ /g__∅)
synonym syrup (P) typical tyranny
y → [ay] /__ (ph, th) V: hyphen scythe typhoid typhoon
y → [ɔ] in unstressed syllables: oxygen platypus
V → [V̆]/__CV: amethyst
x → [z] /∅__: xylophone

Y15 y → [ɔ] / __r: martyr myrrh (also rrh → [r])
n → ∅ /m __#: hymn
rh → [r], m → [əm] /C __#: rhythm

Block 24

24,1

four-syllable compounds

V → [ṽ]/ __CV: citizenship supervision vice-president watermelon
o → [u] / __v: self-improvement
o → [ɔ] / __thV: underclothing
a → [æ] / __nge: Los Angeles (P)

four-syllable words with suffixes

-er a → [æ] / __CV: atomizer
o → [u]: evildoer
-or V → [ṽ] / __CV: elevator generator operator regulator separator speculator
-ly V → [ṽ] / __CV: definitely moderately regularly
b → ∅ / __t#: undoubtedly

24,3

E38 a → [ɔ]: whatever
ere → [ɛr]: wherever
who → [hu]: whoever

U28 u → [ə] / __C ish: punish punishment

24,4

General primary vowel Rule 27

u → [yu] / __C ity (Rule U13): community security
o → [ɔ] / __C ity (Rule 021): authority (also au → [ɔ]) majority
a → [a] (Rule A24): equality

Block 25

25,1

-tion V → [ṽ] / __CV: benediction celebration decoration dedication demonstration elevation generation hesitation imitation legislation operation population regulation resurrection salutation sanitation satisfaction separation valuation vegetation
i → [ɪ] / __tion: exhibition expedition recognition (also e → [ɛ] / __CV)

25,2

I26 ue → ∅ /g __#: dialogue

U26 V → [ṽ] / __CV: genuine manual minuet
oy → [i]: buoy (or buoy → [bɔy])

E26 V → [ṽ] / __CV: linear stereo

026 e → [ɛ] / __CV: heroine

25,3

I36 V → [ṽ] / __CV: idiot patio piano pianist (P)
o → [ɔ] / __thV; th → [ð]: clothier
ae → [ɛ]: aerial

25,4

A12, 012

re → [ər] /C __#: acre ogre

Y12 y → [ɪ] / __Cle#: bicycle tricycle

I12 i → [ɪ] / __Cle#: triple

25,5

E14 e → [ɛ] / __C(r/l)V: leprechaun petrify pueblo (also u [w]) recreation represent

I14 s → ∅: isle island

O14 o → [ə] / __ C($^{r}_{l}$)V: proclamation progress

U14 u → [ə] / __ ClV: public publication publish
publisher quintuplet republic

A14 a → [ə] / __ C($^{r}_{l}$)V: acrobat acrobatic Africa
apricot (P) declaration establish
sacrifice

Block 26

26,1

-able V → [v̆] / __CV: honorable manageable miserable
preferable
shion → [šən]: fashionable
-ment V → [v̆] / __ C(1)V: development establishment
-al V → [v̆] / __CV: additional mechanical
-ist o → [a] / __CV: pathologist

26,2

IE17 a → [æ] / __CV: calorie
au → [ɔ] : auntie (P)
o → [u] / __v: movie

EY17 s → [z]: jersey
o → [ə] / __r: attorney

26,3

AI17 ea → [ɛ]; i → [ɪ] / __CV: Great Britain

26,4

EA33 e → [ɛ] / V __ V: research
ea → [ɛ] in unstressed syllables:
pageant (also a → [æ] / __CV)
sergeant (also e → [a])
vengeance

26,5

IE12 ie → [ɪ]: handkerchief (also d → ∅) (P) kerchief
mischief sieve
s → [z]: rabies series

ie → [ɛ]: friend friendly friendship
unfriendly
ie → [ay] fiery
i → [ɪ] / __nd#: windshield
ch → [š] : chandelier

EI10 ei → [e]: heir heiress their
theirs veil
ei → [ɪ]: counterfeit forfeit
ei → [ay] height
ei → [ɛ]: heifer
p → ∅ / __t#: receipt
ei → [ə] in unstressed syllables: foreign

26,6

EY10 ey → [i]: key keyboard keyhole
ey → [ay] s → [z]: geyser

26,7

-ous V → [v̆] / __CV: generous hideous perilous
vigorous
ie → [ɪ]: mischievous

OU31 V → [v̆] / __CV: Plymouth
e → [ɛ] / V __ V: courtesy
gh → [f]: enough rough roughly
tough
ch → [š]: moustache

OU35 all → al [ɔl]: although
s → [s] / V __ V: resource
qu → [k]; et → [e] / __#: bouquet (P)

OU33 ou → [u]: boulevard
g → [ž]: rouge

OU34 gh → [f]: cough trough (or gh → [θ])

Block 27

27,1

in V → [v̆] / __CV: incredible invisible
dis- a → [æ] / __CV: dissatisfied

27,2

Stress pattern 4A

V → [$\breve{V}$] / __CV:

academy	affiliate (N)	America
American	amphibian	anonymous
apology	astronomer	astronomy
barometer	certificate	continuous
diagonal	diameter	divisible
economy	experiment	geometry
harmonica	imperative	inadequate
indelible	inquisitive	irregular
magnificent	mahogany	meridan
monopoly	municipal	original
particular	perimeter	philosopher
political	rhinocerous (also rh → [r])	
ridiculous	speedometer	
thermometer (P)		

V → [$\breve{V}$] / __C($^{r}_{l}$)V: biography democracy geography
republican stenographer
y → [ə]: s → [s] /V__V: chrysanthemum

Stress pattern 4B

V → [$\breve{V}$] / __CV:

accomodate	affiliate (Vb)	anticipate
apologize	commemorate	consolidate
co-operate	deliberate (Vb)	elaborate (Vb)
evaporate	homogenize	inoculate
participate		

27,3

Stress pattern 4C

V → [$\breve{V}$; / __CV:

anesthetic	apparatus	California
Colorado	Colisseum	epidemic
gladiolus	macaroni	manufacture
mathematics	memorandum	operetta
penicillin	psychedelic (also p → ∅ /∅__C;	
y → [əy] /__chV)		semicolon
tapioca		

e → [ə]: señorita (also n → [ny]) (P)
ukelele (also e → [i] /__∅)
all → al [ɔl]: altogether

27,4

Stress pattern 4D

V → [$\breve{V}$] /__C ($^{r}_{l}$))V: agriculture caterpillar (also r → ∅)
cemetery ceremony dromedary
February helicopter (P)
legislative literary melancholy
military millinery monastery
necessary pomegranate ragamuffin
sanitary secondary secretary
seminary solitary stationery
tabernacle television tributary

e → [ə]: carburetor

27,5

other four-syllable words

-ism → [ɪzəm] /__∅:
communism rheumatism (also rh → [r];
eu → [u]) also V → [$\breve{V}$] /__CV: catechism
criticism

V → [$\breve{V}$] /__CV: capitalize equitable literature
mademoiselle (also oi → [ə]) miniature

27,6

E32 V → [$\breve{V}$] /__CV:

adenoid	adenoids	camera
celery	emerald	everybody
federal	general	generally
liberal	reference	vegetable
veteran		

ei → [ɪ]: sovereign
ch → [š]: machinery
one → [wən]: everyone
ere → [ɛr]: everywhere

O32 V → [$\breve{V}$] /__CV: brocolli chocolate (P)
licorice (also c → [š]) memory

A32 V → [$\breve{V}$] /__CV: salary separate(Aj) separately
a → [ə], r → ∅: sarsaprilla (P)
a → [a]: caramel (P)

I32 a → [ə] /__CV: family

Additional irregularly-spelled words

(See also Section VII)

eau → [o]: beau bureau plateau (also a → [ə]/__CV
eau → [yu]: beautiful beautifully (P) beautify
beauty

eo → [ə] in unstressed syllables: dungeon luncheon
pigeon (also i → [ɪ] /__CV) surgeon

eo → [i]: people

eo → [ɛ]: leopard

eo → [o] yeoman

et → [e]: ballet buffet

x → [gz] /V$_{\text{unstressed}}$__V: exact exactly
exalt: exam example
exempt exert exhaust
exhibit exist existance
also V → [v̆] /__CV: examination
examine executive

ae → [i]: sundae

ea → [e]: bazaar

au → ø: restaurant

monsieur → [məsyér]

aisle → [ayl]

Section VI

SEQUENCED PROPER NAMES

In Cronnell (1971b) nearly 500 proper names (primarily first names, but some surnames) were listed for use in beginning reading instruction. In this section these names are sequenced according to the rule sequence as found in Section II (summarized in Appendix C). Each name is introduced as an exemplar of a spelling-to-sound correspondence when all other correspondences in the name have been previously introduced. (If a rule has no name exemplars, it is not listed in this section.)

Following the sequenced names, irregularly-spelled names are sequenced, using the same methods as used in Section V for irregularly-spelled words.

Sequenced Proper Names for First Year: Frequency = 65

Block 1

1,1

N10, NN10, T10, A15

Ann Nan Nat

1,2

P10 Pat

1,3

L10 Al Lil

S10 Stan

1,4

D10 Dan Sid

E15 Ed Les Len Ned Ted

1,5

M10 Matt Mil Milt Pam Sam Tim

B10 Bill Ben

U15 Bud Dud

1,6

R10 Rob Ron

H10 Hill

O15 Bob Don Dot Tod Tom

Block 2

2,2

TH11 Beth Smith

Block 3

3,1

EE10 Lee

Block 4

4,1

F10 Fran Fred

W10 Will

4,2

K10 Ken Kent

N20 Hank Frank

C12 Cal Mac Scot

CK10 Dick Mack Nick Rick

4,3

G12 Glen Glenn Green Greg Gwen

4,4

J10 Jack Jan Jeff Jill Jim Jon

X10 Max Rex

4,5

V10 Bev Van Vic

Block 6

6,1

A11 Dale Dave Jake Jane Kate

I11 Mike

6,2

O11 Hope

U11 June

E11 Eve Pete Steve

Block 7

7,1

C11 Bruce Grace

G11 Gene

Block 9

9,1

A21 Art Bart Carl Clark Karl Mark

U21 Burt Curt Kurt

I21 Kirk

E21 Bert Herb Sherm

9,2

I21 Albert Herbert Miller

J21 Turner Wilbur

A21 Arthur Parker

Block 10

10,1

I17	Alvin	Calvin	Dennis	Doris	Francis	Martin
	Marvin	Melvin				
U17	Edmund					
E17	Agnes	Alfred	Allen	Ellen	Ernest	Ethel
	Frances	Kenneth	Mildred	Warren		
A17	Allan	Anna	Bernard(P)		Brenda	Cora
	Donna	Edgar	Edna	Edward	Ella	Emma
	Herman	Linda	Lora	Marsha	Martha	Nora
	Norma	Sandra	Sherman	Stella	Thelma	
O17	Arnold	Burton	Clifford	Gordon	Milton	Nelson
	Victor	Wilson				

10,2

Y17	Abby	Andy	Becky	Betsy	Betty	Billy
	Bobby	Buddy	Cathy	Cindy	Danny	Denny
	Gerry	Ginny	Henry	Holly	Jerry	Jimmy
	Kathy	Kenny	Lanny	Molly	Nancy	Nicky
	Patsy	Patty	Penny	Polly	Randy	Sally
	Sammy	Sandy	Sherry	Terry	Tommy	Vicky
	Wendy					

10,4

A21	Arlene	Marlene		
EE10	Cathleen	Doreen	Kathleen	Noreen

10,5

E17	Jerome	

Block 11

11,2

CH10	Chuck	Richard

11,3

WH10	White

11,4

GG10	Peggy

11,6

G31	Gertrude	Gil	Gilbert

Block 12

12,1

AY10	Fay	Gay	Jay	Kay	May	Ray
	Raymond	Taylor				

12,2

EA11	Bea	Dean	Jean	Neal

12,5

OW12	Brown	Howard

Block 13

13,2

A23	Walt	Walter

13,3

O24	Ross

Block 14

Anne	Annette	Constance	Faye	Florence	Moore
Vance	Wayne				

Sequenced Proper Names
for Third Year: Frequency = 95

Block 16

16,1

AI10 Claire Craig(P) Faith Gail Lorraine

16,3

OE10 Joe

OA10 Joan

16,4

AW10 Lawrence

AU10 Laura Maureen Maurice Paul Paula Saul

16,5

OY10 Boyd Joy Joyce Lloyd Roy

16,6

UE10 Sue

EW10 Andrew Lew Lewis Stewart

Block 17

17,2

-s Charles James Jones

Block 18

18,1

E13 Edith Elaine Eva Peter Vera

O13 Lola Roland Tony

Ai3 Ada Amy David Davis Hazel Jacob
Mabel Nathan

I12 Irene

U13 Hubert Judith Judy Lucy Rudy

18,2

S20 Joseph (P) Lisa (P) Rose Susan Susanne

18,3

A22 Barry Carol Carole Cary Clara Gary
Harold Harry Karen Larry Mary Rosemary
Sara Sharon

18,4

025 Jo Margo

Block 19

19,2

H20 John Johnny Johnson Sarah

Block 20

20,2

PH10 Phil Phillip Ralph Randolph(P) Rudolph (P)

CH31 Chris

Block 22

22,2

Stress pattern 3A

Allison Anderson Anthony Benjamin Christopher
Jacqueline Jennifer Jessica Peterson

22,3

Stress Patern 3C

Dolores Loretta Melissa Priscilla Rebecca Roberta

Sequenced Proper Names
for Fourth Year: Frequency = 103

Block 23

23,1

A24 Wanda

23,2

I35 Anita Bernice Christine Josephine (P)
Lucille Pauline Rita Toni

I25 Cecilia Celia Julia William Williams

23,3

Y11 Clyde

Y15 Carolyn Cathryn Gwendolyn Kathryn Lynn
Marilyn

Y16 Phyllis

Block 24

24,2

E38 Beverly Evan Kevin

Block 25

25,2

I26 Brian

U26 Stuart

E26 Andrea Beatrice Leon Theodore

025 Joanna Joanne Joel Lois

25,3

I36 Cynthia Gloria Harriet Lillian Marion
Sylvia Victoria Vivian

25,5

A14 Adrienne April

Block 26

26,2

IE17 Annie Archie Bernie Bessie Bobbie
Bonnie Carrie Cathie Charlie Connie
Eddie Ellie Elsie Ernie Freddie
Howie Jackie Jeannie Jennie Julie
Katie Laurie Leslie Margie Nellie
Robbie Ronnie Susie

EY17 Audrey Dudley Harvey Jeffrey Mickey
Rodney Shirley Sidney Stanley

26,4

EA33 Earl

26,5

EI10 Keith Neil Sheila

26,7

OU31 Doug Douglas Young

OU33 Lou Louie Louis Louisa Louise

Block 27

27,6

E32 Catherine Evelyn Katherine Margery

A32 Barbara Margaret

032 Dorothy Marjorie Nicholas

Sequenced Irregularly-Spelled Proper Names

Recommended Order of Instruction for Irregularly-Spelled Proper Names in Third Year: Frequency = 37

Block 16

16,6

EW10 eu → [y u]: Eugene Eunice

Block 18

18,1

E13 e → [ɛ] /__CV: Eric Helen

O13 o → [ə] /__CV: Donald Robert Roger Ronald

A13 a → [æ] /__CV: Adam Alan Alex Alice Janet Janice
a → [ə]: Lana
a → [e] /__chV: Rachel

18,4

025 u → [u] /__# Stu

Block 19

19,2

GH10 u → [y u]: Hugh

19,5

L20 l → ∅: Malcolm

Block 20

20,2

PH10 e → [i] /__phV; ph → [v]: Stephen

CH31 ch → [š]: Charlene Charlotte Michelle

20,3

TH12 th → [t]: Esther Thomas (also o → [ə] /__CV) Thompson
tth → [θ]: Matthew

Block 22

22,1

Stress pattern 3B

V → [v̆] /__CV: Abigail Isabel

22,2

Stress pattern 3A

V → [v̆] /__CV: Emily Gregory Jonathan Madeline Oliver Pamela Timothy

22,3

Stress pattern 3C

th → [t]; s → [s] /V__V: Theresa

Recommended Order of Instruction for Irregularly-Spelled Proper Names in Fourth Year: Frequency = 28

Block 23

23,2

I35 Eloise → [ɛ́ləwɪz]
e → [ɛ] /__CV: Geraldine

I25 V → [v̆] /__CV: Daniel Virginia

Block 25

25,2

126 a → [æ] /__CV: Diana Diane

U26 a → [æ] /__CV: Samuel

25,5

E14 e → [ɛ] /__CrV: Debra

A14 a → [æ] /__CrV: Patrick

Block 26

26,2

IE17 ie → [ɪ] in unstressed syllables: Marie
a → [æ] /__CV: Natalie Valerie

26,4

EA33 ea → [ə] in unstressed syllables:
Eleanor (also e → [ɛ] /__CV) Jeanette

26,5

IE12 ei → [a y]: Eileen

Block 27

27,2

Stress pattern 4A

V → [v̆] /__CV: Elizabeth Nathaniel
Penelope (also e → [ɪ] /__#)

27,3

Stress pattern 4C

a → [æ] /__CV: Alexander

27,6

E32 e → [ɛ] /__CV: Frederick

O32 e → [ɛ] /__CV: Deborah

Miscellaneous

cia → [ʃə]: Marcia Patricia (also i → [ɪ] /__CV)
u → [u]: Ruth
i → [a y] /__chV̄; ae → [ə]: Michael
ae → [e]: Rae
eo → [ɛ]: Leonard
ge → [ǰ]: George

Section VII

UNSEQUENCED ADDITIONAL WORDS: FREQUENCY = 253

In addition to the words sequenced in Sections IV to VI there remain a number of words which were not sequenced. Because of the variety of these materials, it was decided to present them all in one section, rather than to attempt to sequence them (as, for example, a Block 28). Irregularly-spelled words are included, with the irregular grapheme units underlined (mostly exceptions to general primary vowel Rule 13).

A. Five- and six-syllable words Frequency = 112

All of the rules involved in these five- and six-syllable words have been introduced in Blocks 1-27. The only new features is increased word length.

1. Five-syllable words Frequency = 102

a. Five-syllable words with affixes Frequency = 64

-tion	abbreviation	administration	association (P)
	civilization	communication	confederation
	co-operation	denomination	emancipation
	evaporation	imagination	inauguration
	incorporation	interrogation	intoxication
	investigation	multiplication	organization
	recommendation	representation	
-ly	absolutely	accidentally(P)	affectionately
	approximately	continually(P)	exceptionally(P)
	immediately	industriously	necessarily
	occasionally(P)	originally	particularly(P)
-ity	curiosity	electricity	hospitality
	legibility	opportunity	personality
	popularity	probability	university
-al	agricultural	alphabetical	constitutional
	editorial	experimental	geographical
	international	oratorical	paradoxical
	perodical	transcontinental	
un-	uncomfortable(P)	unnecessary	unreasonable
	unsanitary		
dis-	disagreeable	disobedience	
other:	abolitionist	confectionary	imaginable
	indivisible	manufacturer	revolutionize

b. Other five-syllable words Frequency = 38

amphitheater	anniversary	appendicitis
archipelago	auditorium	cafeteria
cock-a-doodle-do	delicatessen	denominator
enthusiastic	entymology	evaporated
exclamatory	hippopotamus	hydroelectric
imaginary	inimitable	innumerable
inseparable	intermediate	interrogative
irreproachable	manufactory	metropolitan
miscellaneous	observatory	patriotism
Pennsylvania	preliminary	refrigerator
representative	sanatorium	superintendent(P)
theological	tuberculosis	veterinary
veterinarian	vocabulary	

2. Six-syllable words Frequency = 10

capitalization	characteristic	encyclopedia
extraordinary(P)	oleomargarine	responsibility
revolutionary	satisfactorily(P)	unconstitutional
unsatisfactory		

B. Palatalizations Frequency = 141

Palatalizations, although relatively common, are rather complex (see Cronnell, 1971a, pp. 32-34). The three most frequent palatalizations--tion, sion, ture--are found in Section IV (21,2; 21,3; 21,4; 25,1). The remaining palatalizations are listed below.

1. a. -cial → [šəl]:

artificial	beneficial	commercial	especially(P)
financial	judicial	official	social
special	specialist	specially(P)	specialty

b. -sure → [žər];

exposure	leisure	measure	measurement
pleasure	treasure	treasurer	treasury

c. -ssure → [šər]: assure (or [šur]) pressure

d. -tune → [čun] (or [čən]):

fortunate	fortunately	fortune	fortune-teller
misfortune	unfortunate	unfortunately	

2. a. -sia → [žə]: Asia Persia
b. -sian → [žən]: artesian

	c.	-ssian → [šən]:	Russian		
	d.	-cian → [šən]:	electrician politician	magician	physician
	e.	-cient → [šənt]:	ancient sufficiently	efficient	sufficient
	f.	-science → [šəns]:	conscience		
	g.	-ciency → [šənsi]:	efficiency	proficiency	
	h.	-tient → [šənt]:	impatient patiently	impatiently quotient	patient
	i.	-tience → [šəns]:	patience		
	j.	-tia → [šə]:	militia		
	k.	-tial → [šəl]:	essential residential	initial	partial
	l.	-dial → [jəl]:	cordial	cordially	
3.	a.	-tious → [šəs]:	ambitious nutritious	cautious superstitious	cautiously
	b.	-teous → [čəs]:	righteous		
	c.	-gious → [jəs]:	contagious	religious	
	d.	-geous → [jəs]:	advantageous outrageous	courageous	gorgeous
	e.	-cious → [šəs]:	delicious precious vicious	ferocious spacious	gracious suspicious
	f.	-scious → [šəs]:	conscious	unconscious	
	g.	-xious → [kšəs]:	anxious	anxiously	
4.	a.	-ci → [ši]:	appreciate	appreciation	associate
	b.	-ti → [ši]:	initiate		
	c.	-su → [žu]:	unusual usually	unusually	usual

	d.	-tu → [ču]:	actual congratulation punctual spiritual (P)	actually(P) eventually (P) punctuality statuary	congratulate mature punctuation statue
	e.	-tur(e) → [čər]:	naturally (P)	saturate	unnatural (P)
	f.	-teur → [čər]:	amateur pasteurizer	pasteurization	pasteurize
	g.	-du → [ǰu] (or [ǰə]):	educate educational graduate pendulum situation	educated gradual graduation schedule	education gradually individual situate
5.	a.	-tian → [čən]:	Christian		
	b.	-xion → [kšən]:	complexion	complexioned	
	c.	-cean → [šən]: -ce → [ši]:	Atlantic Ocean oceanic	ocean	Pacific Ocean
	d.	-gion → [ǰən]:	legion	region	religion
	e.	-dier → [ǰər]:	soldier		
	f.	-cier → [šər]:	glacier		
	g.	-zier → [žər]:	glazier		
	h.	-sier → [žər]:	hosiery		
	i.	-ssue → [šu]:	issue	tissue	
	j.	-sur → [šər]:	insurance		
	k.	-xur → [kšər]:	luxurious	luxury	
	l.	-cies → [šiz]:	species		
	m.	-tio → [šo]:	ratio		

Section VIII

SEQUENCED CONTRACTIONS AND ABBREVIATIONS

CONTRACTIONS

The nature and use of contractions. Contraction involves the shortening of a word[1] by omitting sounds (or in writing, letters), e.g., will → 'll, not → n't. While most function words are reduced in speech, only certain spoken contractions are found as written contractions. For example, an' and 'n', while common in speech, are generally found only in dialect writing and in advertising; should have is generally pronounced [šúdəv], but is rarely written as the contraction should've.

Not only are contractions very common in speech, but they are probably more common than their full forms. It has even been suggested (Mohr, 1969, p. 8) that "what we call contractions may really be the underlying forms of the language from which the uncontracted forms are derived and that many common opinions about and attitudes toward contractions are traceable to orthographic conventions." In any case, there is no doubt that contractions are natural and usual in speech: people (adults and children) do not say, "It is Ann;" they say, "It's Ann."

The use of contractions in beginning reading. The major argument for using contractions in beginning reading is that they are common in speech and are probably more familiar to children than the full forms. The use of contractions permits a closer match between the child's language and the language of the reading materials, and allows syntax which is both natural and familiar.

Hansen (1966, p. 13) gives two additional reasons for using contractions:

1. "They are graphically marked with an apostrophe." Since some contractions have irregular spelling-to-sound correspondences and must be taught as sight words, the use of the apostrophe sets off these contractions as a special set of words for which a phonics strategy is inappropriate, thus reducing interference between rule words and sight words.

2. "They provide sentence elements to which any noun phrase can be easily and naturally attached" (e.g., It's___). In addition, some contractions (e.g., let's, I'll) provide

---

[1]Occasionally, contraction involves reduction in a word pair, e.g., will not → won't.

"sentence elements" to which any simple verb phrase can be attached. This use of contractions allows syntactically natural sentences within the limits of the vocabulary.

Contractions for SWRL Reading Program. There are 54 contractions listed in Rinsland (1945) and presented in Berdiansky et al. (1969, p. 70).[2] Table 1 lists the contracted forms, four of which ('d, 'll, n't, and 's) account for three-fourths of those found. Several facts should be noted about the phonological realization of the contracted forms:

1. Two-thirds of the n't forms are syllabic, as is one 'll. In all cases these are automatic phonological alternations.

2. Seven of the ten cases of 's are pronounced [z]; this is also an automatic phonological alternation.

3. The forms 're and 've are pronounced [r] and [v], respectively. The [r] pronunciation, as usual, has an effect on the preceding vowel.

Otherwise, contracted forms generally involve the usual spelling-to-sound correspondences; e.g., 'd → [d] (Rule D10), 'll → [l] (Rule LL10). However, the contracted form often occurs earlier in the sequence than the full form and may involve regular spelling-to-sound correspondences as opposed to irregularities in the full form.

The 54 contractions have been arranged according to the rule sequence used in this report. Each contraction is introduced when all its component correspondences have been introduced. Included as regular correspondences are the phonological features outlined above. Sequenced regularly-spelled contractions are listed in Table 2.

Sequenced irregularly-spelled contractions are listed in Table 3. They are arranged according to the sequence of irregularly-spelled words in this report (Section V). When the irregularity is not in the base form it is given beside the contraction.

ABBREVIATIONS

The nature and use of abbreviations. An abbreviation is "a letter or group of letters taken from a word or words and employed to represent it or them for the sake of brevity" (Abbreviation, 1970, p. 13).

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[2]The Berdiansky et al., listing also includes O.K., which actually is neither a contraction nor an abbreviation; it is a separate lexical item which can enter the instructional sequence after the letter names for o and k are taught.

Abbreviations are common in informal writing and in technical writing, where the abbreviations of the particular field are used. In ordinary formal writing, abbreviations are less common, except for certain forms in everyday use.

There is no consistent usage concerning periods at the ends of abbreviations. For the sake of consistency, all abbreviations in this report are followed by periods, with the exception of directions (N, S, E, W), pi's, and Xmas, which conventionally are clearly not followed by periods.

The use of abbreviations in beginning reading. For the most part, there is no need for abbreviations in beginning reading instruction (with exceptions noted below). Full forms are most common and can be used easily and naturally. Since abbreviations violate spelling-to-sound correspondences and must be taught as sight words, they may as well be avoided and the full forms used. At some later stage of reading abbreviations should be taught, probably when they are needed in other subjects (e.g., ft. in arithmetic, abbreviations for states in geography).

There are a few abbreviations which are necessary in beginning reading since they are more common than their full forms:

1. Mr., Mrs., Ms., Dr., when used before proper names. These are the only forms in normal use. There are no written full forms of Mrs. and Ms.

2. a.m., p.m., A.D., B.C., P.S. The full forms of these abbreviations are rarely used.

3. T.V. (or TV). The abbreviation (pronounced as letter names) is very common in speech.

These abbreviations may be needed earlier in reading, especially Mr. and Mrs.

Abbreviations for SWRL Reading Program. As noted above, there is little need for abbreviations in beginning reading. However, a list (from Berdiansky et al. 1969, pp. 66-69, with a few additions) has been prepared of over 200 abbreviations appropriate for the SWRL Reading Program. Some of these abbreviations are those found in Rinsland (1945); the others are commonly used abbreviations for words in the SWRL lexicon (Berdiansky et al., 1969).

Several facts should be noted about the abbreviations in this section:

1. Two or more full forms may have the same abbreviation, e.g., saint, street → st. Some full forms may have two or more abbreviations, e.g., page → p., pg.

2. Most abbreviations are pronounced as their full forms. However, a few are pronounced as the letter names of the abbreviation, e.g., T.V. → [tivɪ]. Such abbreviations are footnoted accordingly.

3. The full form of several listed abbreviations is not found in the SWRL lexicon; these are generally Latin words.

The abbreviations are sequenced according to the position of the full form in the present sequence. Where the full form of an abbreviation is a derived word, the position in sequence is given for the base, e.g., rec'd ← received, sequenced under receive. Irregularities are those found in the full form and indicated in Section V. There are three sequenced lists:

a. Table 4: Sequenced abbreviations of regularly-spelled words (cf, Section IV of this report);

b. Table 5: Sequenced abbreviations of irregularly-spelled words (cf, Section V of this report);

c. Table 6: Sequenced abbreviations of additional words (cf, Section VI of this report).

In addition, Table 7 lists abbreviations whose full forms do not appear in the SWRL lexicon.

Since all abbreviations, with the exception of those pronounced as letter names or as abbreviated words, are irregular in terms of spelling-to-sound correspondences, they may be introduced as sight words, with the provision that they not be introduced until after all their component letters have been taught. However, except for those common ones of particular usefulness, it seems most reasonable to introduce abbreviations after their full forms are known.

Table 1

Contracted forms

Contracted Form	Number of Occurrences	Full Form	Position of Full Form in Sequence	Position in Sequence of Correspondence for Contracted Form
'd	6	had/would	1,6 H10/ir* L20 19,5	1,4 D10
'll	7	will/shall	4,1 W10/ir 13,2 A23	1,3 LL10
n't	18	not	1,6 015	1,1 N10, T10
're	3	are	ir 6,1 A11	6,1 E18
's	10	has/is	ir 1,6 H10/ir 1,3 S10	1,3 S10
't (initial)	2	it	1,1 I15, T10	1,1 T10
've	4	have	24,2 A38	6,1 E18
Miscellaneous				
'm	1	am	1,5 M10	1,5 M10
ma'am	1	madam	ir 18,1 A13	4,1 F10
o'er	1	over	18,1 013	9,1 E21
's	1	us	1,5 U15	1,3 S10

*ir = in sequence of irregularly-spelled words, Section V of this report.

Table 2

Sequenced Regularly-Spelled Contractions

Position		Contraction		
1,3	LL10	it'll***		
	S10	it's		
1,4	D10	didn't**		
	E15	let's		
1,6	H10	hadn't**		
2,1	TH13	that's		
3,1	EE10	needn't**		
	E25	he'd	he'll	he's*
		she'd	she'll	she's*
		we'd	we'll	
3,2	C12	can't		
6,2	E11	here's*		
	E11 or E18	we're	we've	
12,4	OW12	how's*		
13,2	A23	all's*		
16,1	AI10	ain't		
24,2	A38	haven't**		
26,6	EY10	they'd	they'll	they're
		they've		
26,7	OU33	you'd	you'll	you're
		you've		

*s → [z]
**syllabic n't
***syllabic 'll

Table 3

Sequenced Irregularly-Spelled Contractions

Position		Contraction		Irregularity, if not in base
1,3	LL10	I'll		
	S10	isn't**	'tis	
1,4	D10	I'd		
1,5	M10	I'm		
1,6	H10	hasn't**		
4,1	F10	ma'am		a'a → [æ]
	W10	'twas	wasn't**	
6,1	E18	I've		
	A11	aren't		
6,2	E11	weren't		
9,1	E21	o'er		o'e → [o]
11,3	WH10	what's	where's*	
		who's*		
13,3	024	don't	won't	o → [o]
17,2	-s	doesn't**		
19,5	L20	couldn't**	shouldn't**	
		wouldn't**		
	T20	mustn't**		t → ∅

*s → [z]
**syllabic n't

Table 4

Sequenced Abbreviations of Regularly-Spelled Words

Position of Full Form in Sequence		Abbreviations	Position of Full Form in Sequence		Abbreviation
3,1	EE10	st. (Street)		E17	obj.
					prob.
4,1	F10	ft. (feet)			subj.
		l.			
				O17	dr. (doctor)
	W10	W			gal.
		w., w/			
		T	11,2	CH10	chap.
4,2	K10	wk.			in.
					Mar.
6,1	I11	dr. (drive)			
		mi.	11,4	QU10	qt.
					qtr.
7,1	C11	pl. (place)			sq.
	G11	p., pg.	12,1	AY10	frwy.
		pp.			Sun.
9,1	A21	pk.	12,2	EA11	E
		pt. (part)			ea.
		yd.			P.T.A.* (teacher)
					S.S.*
	O21	ft. (fort)			yr.
		N			
		no. (north)	12,3	OO11	n. (noon)
		pt. (port)			rm.
9,2	E21	adv		OO12	ft. (foot)
		Mr.			
			13,1	O31	doz.
	O21	cor.			mo.
					Mon.
10,1	A17	bkwd			
		fwd.		U31	bu.

*Pronounced as letter names.

Table 4--continued

Position of Full Form in Sequence		Abbreviations	Position of Full Form in Sequence		Abbreviation
13,2	A23	sm.	18,3	A22	P.T.A.* (parent)
14,2	VrCe#	chg.	19,1	-ment	apt.
		lg.			dept.
					govt.
14,2	Unstressed VCe#	pkg.		-or	dir.
					gov.
16,1	AI10	chm.			prof.
		pd.			
		pr.		-ant	asst.
		rwy.			
		st. (saint)	19,2	124 + GH10	hwy.
					r., rt.
16,2	OU10	acct.			
		am't.		H20	hr.
		lb.			
		mt.	20,2	PH10	ph.
		n. (noun)			
		oz.		CCH31	sch.
		S, so.			
		w/o	20,3	TH12	bro.
16,3	OA10	rd.	21,2	-tion	conj.
		rr.			jct.
					sta.
16,4	AU10	Aug.			
			21,3	-sion	disc.
16,5	OI10	pt. (point)			div.
16,6	EW10	N.Y.	22,1	Stress pattern 3B	inst.
					long.
17,1	3-syllable compounds	hdqrs.			
		h.p.	22,2	Stress pattern 3A	adj.
					co.
18,1	E13	freq.			est. (estimate)
		re.			Fla.
					hosp.
	O13	pron.			opp.
					orch.
	I13	Fri.			perm.
		priv.			prin.
		pvt.			
			22,3	Stress pattern 3C	Dec.
	U13	cu.			elec.
		pl. (plural)			Nov.
					Oct.
					Sept.

*Pronounced as letter names.

Table 4--continued

Position of Full Form in Sequence		Abbreviations
23,1	A24	Wash.
23,2	I25	jr. rev. (review) sr.
24,1	4-syllable compounds	U.S.*
24,2	E38	Mex. rev. (revenue)
24,3	A38	av., ave.
25,1	-tion	corp. (corporation) prep. rev. (revolution)
25,2	I26	q.t.* sci.
25,4	A12	tbs., tbsp.
25,5	A14	Apr.
	I14	lib. (library)
26,3	AI17	Capt. mt. (mountain)
26,5	EI10	rec'd.
26,6	E120	wt.
26,7	-ous	prev.
	OU31	dbl.
	OU33	rt., rte.
26,8	UI31	bldg.
27,1	in-	ind.
27,2	Stress pattern 4C	arith.
27,3	Stress pattern 4C	Ariz. ec., econ. Miss.
27,6	E32	conf. eve. fed. temp.
	032	corp. (corporal) hist.
	A32	av., avg.

*Pronounced as letter names.

Table 5

Sequenced Abbreviations of Irregularly-Spelled Words

Position of Full Form in Sequence	Abbreviations	Position of Full Form in Sequence	Abbreviation
11,1 NG10	Eng.	22,3 Stress pattern 3C	lieut.
12,1 AY10	Wed.		pj's*
15,2	pt. (pint)	22,4 Stress Pattern 3D	Ill.
16,6 UE10	Tues.		ref.
18,1 E13	s., sec.	23,2 I25	Va.
O13	vol.	23,3 Y13	cyl.
A13	mgr.	24,1 4-syllable compounds	V.P.*
	pat.	25,1 -tion	el., elev.
I13	fig.		pop.
	liq.	25,5 E14	rec.
	min.	I14	is.
19,3 W20	ans.	A14	est. (established)
19,6 U20	lang.	26,1 -able	Hon.
20,2 CH31	B.C.*	26,2 EY17	atty.
	Xmas**	IE17	cal.
21,2 -tion	nat., nat'l.	26,4 EA33	sgt.
22,1 Stress pattern 3B	cat.	26,5 EI10	ht.
	chem. (chemistry)	26,7 OU33	blvd.
	Dem.	27,2 Stress pattern 4A	Am., Amer.
	lat.		diag.
	Sat.		geog.
22,2 Stress pattern 3A	chem. (chemical)		irreg.
	med.		orig.
	neg.		Rep.
	pres.		
	reg. (regular)		

*Pronounced as letter names.

**Pronounced [ɛ́ksmɪs].

Table 5--continued

Position of Full Form in Sequence		Abbreviations
27,3	Stress pattern 4C	Ca., Cal., Calif. mfg.
27,4	Stress pattern 4D	Feb. Jan. sec'y T.V.*
27,5	Other 4-syllable words	lit.
27,6	E32	gen. lib. (liberal) ref. (reference) vet.** (veteran)
After 27,6	Additional irregularly-spelled words	ex. exec.

*Pronounced as letter names.
**Pronounced [vɛt] and thus in regular sequence at 4,5 V10.

Table 6

Sequenced Abbreviations of Additional Words (i.e., words in Section VI of this report)

Position of Full Form in Section VI	Abbreviation
A1a	int'l.
	Pa., Penna.
	Org.
	P.T.A.* (association)
	rep.
	univ.
A1b	supt.
	vet.** (veterinarian)
	vocab.
B1	esp.
	soc.
	sp., spec.
B4	assoc.
	ed., educ.
	grad.
	nat., nat'l. (natural)
B5	reg. (region)

*Pronounced as letter names.
**Pronounced [vɛt] and thus in regular sequence at 4,5 V10.

Table 7

Abbreviations Whose Full Forms do not Appear in the SWRL Lexicon

A.D.*	a.m.*
Mrs.	etc.
p.m.*	Ms.
Rev.	P.S.*

*Pronounced as letter names.

APPENDIX A

KEY TO PRONUNCIATION AND SYMBOLS

Key to Pronunciation

Symbol	Key words (corresponding grapheme units underlined)
Vowels	
[i]	scene, neat, see, chief, happy
[ɪ]	bit, hidden, gym, build
[e]	name, day, rail, they, vein, eight
[ɛ]	get, head
[æ]	fat, man
[a]	hot, car, wash
[ɔ]	song, loss, taught, lawn, talk, ball, thought
[o]	bone, go, fork, toe, board, know, soul, though, war
[ʊ]	put, push, book, could
[u]	food, dew, tune, blue, suit, soup
[ə]	but, above, young
[ay]	mine, die, high, cry, type
[aw]	found, owl
[oy]	boy, noise

Symbol	Key words (corresponding graphemes underlines)
Consonants	
[b]	boy, cab, rabbit
[č]	church, chip, hatch
[d]	dead, do, riddle
[f]	fun, fair, off, phone
[g]	go, get, leg, egg
[h]	home, head
[ǰ]	judge, gem, age, giant
[k]	kill, kick, milk, come, cat
[l]	let, little
[m]	man, ham
[n]	no, hand
[ŋ]	sing, single, think
[p]	pull, trip
[r]	red, far
[s]	see, ice, miss
[š]	she, sure, issue, nation, hash
[t]	ten, hit, liked
[θ]	thing, bath
[ð]	them, bathe
[v]	vase, love
[w]	wet, language, quick
[y]	yet, you
[z]	zoo, lazy, please, wives
[ž]	vision, treasure

Stress

ˊ annóy, fáscinate

ˋ fascinàte

Key to Symbols

Parts of speech

Aj = adjective

N = noun

Vb = verb

Other symbols

P = alternate pronunciation (e.g., for either, route)

AS = alternate stress pattern (e.g., for invalid), generally also involving an alternate pronunciation (P)

ɛ = a final silent e (Rule E18) which is dropped when adding a suffix (e.g., hide, hiding)

V = vowel

C = consonant

Ø = silent letter

Symbols used in stating rules of correspondence are described in Berdiansky, Cronnell, and Koehler (1969, pp. 14-15). Additionally, in the present report, the arrow (→) is sometimes used to represent a orthographic change: e.g., y → i + ly (i.e., y becomes--is changed to--i when ly is added, e.g., happy, happily).

APPENDIX B

GLOSSARY

AFFIX: a nonfree form added to a word to make a new word, e.g., the un- in unfair, the -s in boys. Affixes include both prefixes and suffixes.

BASE (WORD): a word to which an affix is added forming a new word; e.g., boy is the base of boys.

COMPOUND: a word composed of two (or more) words, e.g., goldfish, houseboat.

COMPLEMENTARY DISTRIBUTION: a situation in which two sounds or two grapheme units do not contrast in the same environment and are thus classed together. E.g., in English the grapheme units oi and oy are in complementary distribution, since the former occurs only initially and medially, while the latter generally occurs only finally.

CONSONANT DIGRAPH: a grapheme unit composed of two or more consonant letters, e.g., th, ck, qu.

CONSONANT CLUSTER: a series of two or more consonant grapheme units, e.g., spr, nch, nk.

DIALECT: the way a language is spoken (or written) by any group of speakers. Dialects may be based on geographical, social, or ethnic differences, but the term does not indicate any value judgment. The dialect used in this report is known as "General American," a somewhat vague term for the type of English most commonly spoken in the United States.

DIGRAPH: a two-letter grapheme unit, e.g., ch, oa. This term is generally applied to consonants, vowel digraphs being called secondary vowels.

DOUBLE CONSONANT: a grapheme unit composed of two occurrences of the same consonant, e.g., dd, ll. Because of English phonotactics, most spelled double consonants are pronounced the same as a single consonant, e.g., d → [d], dd → [d]. Because of environmental constraints on c and g, this does not completely apply to cc and gg; nor does it apply to words containing morpheme boundaries, e.g., dd → [dd] in midday. The term "geminate" is sometimes used when describing double consonants.

ENVIRONMENT: other letters or sounds in a word which affect a spelling-to-sound correspondence. Indicated by a slash (/) and by underlining in the position of the correspondence. E.g., the environment /__r means that the correspondence occurs when the grapheme unit is followed by r.

EXCEPTION: a grapheme unit in a word for which no (listed) spelling-to-sound correspondence is applicable. Words containing exceptions are also called exceptions. The term "irregular" refers to exceptions.

EXEMPLAR: a word containing a particular spelling-to-cound correspondence.

GRAPHEME UNIT: one or more letters functioning as a unit in deriving spelling-to-sound correspondences, e.g., a, t, mm, oy, th, qu. Whatever is on the left-hand side of a rule of correspondence is a grapheme unit.

GRAPHOTACTICS: restrictions on the combination of letters and grapheme units in a particular language; e.g., x is never doubled and q is always followed by u in English. Some graphotactic restrictions are the result of phonotactic restrictions; e.g., no English word can begin with the letters ft. Cf, PHONOTACTICS.

IRREGULAR: see EXCEPTION.

LONG VOWELS: the sounds [e, i, ay, o, (y)u].

MULTISYLLABLE: a word of two or more syllables.

ORTHOGRAPHY: the spelling system of a language.

PALATALIZATION: the process which accounts for many occurrences of the palatal sounds [š, ž, č, ǰ] as in nation, vision, nature, gradual. While this is basically a phonological process, it is also used to describe certain spelling-to-sound correspondences.

PHONOLOGY: the sound system of a language.

PHONOTACTICS: restrictions on the combination of sounds in a particular language; e.g., no word in English can begin with the sounds [ft]. Cf, GRAPHOTACTICS.

POLYSYLLABLE: a word of three or more syllables.

PRIMARY VOWEL: a grapheme unit composed of a single vowel letter, i.e., a, e, i, o, u, y.

PSEUDO-AFFIX: commonly recurring word parts which look like suffixes and prefixes, but which do not act as such grammatically and semantically, e.g., the com [kəm] in commit, communion, and communicate. In general, pseudo-affixes were historically affixes (e.g., Latin com- < cum 'with'), but they have lost their independent status. In some cases, true affixes and pseudo-affixes share the same form, e.g., rename/repair, re-form ('form again')/reform.

RULES OF CORRESPONDENCE: see SPELLING-TO-SOUND CORRESPONDENCE.

SECONDARY VOWEL: a grapheme unit composed of two (or more) vowel letters, e.g., ee, oa, ay. Also called "vowel digraph."

SHORT VOWELS: the sounds [æ, ɛ, ɪ, ɑ, ə].

SILENT LETTER: a letter in a word for which there is no corresponding sound in the pronunciation of the word (symbolized by Ø). Some silent letters mark the pronunciation of other letters, e.g., the e in name; some are graphotactic devices, e.g., the e in have; some are anachronisms or scribal inventions, e.g., the gh in bough, the b in debt.

SPELLING-TO-SOUND CORRESPONDENCE: the relationship between the spelling and pronunciation of a grapheme unit. Also called spelling-to-sound correspondence rules and rules of correspondence (rules, for short).

STRESS: the degree of prominence found on a syllable. The basic distinction in spelling-to-sound correspondences is between stressed (marked ˊ over a vowel) and unstressed (unmarked) syllables. In polysyllabic words it is useful to recognize two levels of stress: primary (ˊ) and secondary (ˋ), e.g., accómmodàte. Stress is sometimes called "accent."

SYLLABLE: a segment of speech containing one vowel sound and optional consonant sounds. (In addition, certain consonant sounds may be syllabic).

SYLLABLE DIVISION: the division between two syllables. Phonologically this is a disputed and unclear matter in English. Orthographically syllable division is regulated by dictionaries and printer's manuals. In this report, syllable division is indicated only in clear-cut cases when necessary for interpretation of spelling-to-sound correspondences.

VOICE: vibration of the vocal chords during speech. All vowels are voiced (i.e., have voice), as are the following consonants: [b, d, g, v, ð, z, ž, ǰ, m, n, ŋ, r, l, w, y]. The voiceless consonants [p, t, k, f, θ, s, š, č, h] are produced without vibration of the vocal chords. The voiced/voiceless distinction is of particular importance in the pronunciation of the -s and -ed suffixes.

APPENDIX C

SUMMARY OF RULE SEQUENCE[1]

First Year

(One-syllable words; Single consonants; Double consonants; Consonant digraphs; Short vowels)

Block 1 (Highest frequency single consonants; Double consonants; General primary vowel Rule 15: short vowels)

1,1 N10, NN10, T10, (TT10)[2], A15, I15
1,2 P10, (PP10)
1,3 L10, LL10, S10, SS10
1,4 D10, DD10, E15
1,5 M10, (MM10), B10 (BB10), U15
1,6 R10, (RR10), H10, O15

Block 2 (Consonant digraphs)

2,1 SH10
2,2 TH13, TH11

Block 3 (EE10; Long vowel at end of word)

3,1 EE10, E25
3,2 Y19

Block 4 (Less frequent consonants)

4,1 F10, FF10, W10
4,2 K10, N20, C12, CK10
4,3 G12
4,4 J10, X10, Y10
4,5 V10, Z10, ZZ10

---

[1] See Appendix D for the pronunciation, rule description, and example of each rule.

[2] Block 1 double consonant rules in parentheses have no exemplars at the point where they are listed in the sequence. Nevertheless, they are included--with their corresponding single consonant rules--because both rules have the same pronunciation. In Appendix D, it is noted where exemplars of the parenthesized rules first appear.

Second Year

(Two-syllable words; Long-vowels; Vowel-r; Other high-frequency vowel rules; High-frequency consonant digraphs; Unstressed vowels; High-frequency secondary vowels)

Block 5 (Compounds; Suffixes; NG10)

5,1 Compounds using First-Year rules (first syllable stressed)
5,2 -ing suffix with previously introduced base words
5,3 -es suffix (plurals and third-person singular, present tense forms) of previously introduced base words
5,4 -ed suffix (past tense) of previously introduced base words
5,5 NG10 (one-syllable words)

Block 6 (General primary vowel Rule 11)

6,1 E18, A11, I11
6,2 O11, U11, E11, EE10 + E18

Block 7 (C11, G11; Suffixes with general primary vowel Rule 11)

7,1 C11, G11
7,2 -s, -d, and -ing suffixes added to words with general primary vowel Rule 11.

Block 8 (Two-syllable words, first syllable stressed)

8,1 Compounds with rules in Blocks 5-7
8,2 A16, I16, U16, E16, O16 (two-syllable words, first syllable stressed)

Block 9 (Vowels before r)

9,1 A21, O21, U21, I21, E21 (one-syllable words)
9,2 E21 (plus -er suffix with previously introduced words), U21, I21, A21, O21 (two-syllable words, first syllable stressed)
9,3 A25, O22

Block 10 (Unstressed vowels; Two-syllable words, second syllable stressed)

10,1 I17, U17, E17, A17, O17 (first syllable stressed)
10,2 Y17, LE22
10,3 Compounds (second syllable stressed)
10,4 I16, U16, A16, O16, E21, O21, EE10 (two-syllable words, second syllable stressed)
10,5 A17, E17, O17, U17, I17 (second syllable stressed)

Block 11 (Consonant digraphs; GG10, CC12, G31)

11,1 NG10 (two syllables)
11,2 CH10, TCH10
11,3 WH10
11,4 QU10
11,5 GG10, CC12
11,6 G31

Block 12 (High-frequency secondary vowels)

12,1 AY10
12,2 EA11, EA31
12,3 OO11, OO12
12,4 OW11, OW12

Block 13 (Additional common primary vowel rules)

13,1 O31, U31
13,2 A23, O23
13,3 I22, O24

Block 14 (Nonlong vowels in VC(C)e words)

14,1 Stressed VCCe#
14,2 Stressed VrCe#
14,3 Unstressed VCCe# and VCe#

Third Year

(2-3 grade-level words; Three-syllable words; Medium-frequency primary and secondary vowels; Low-frequency consonants; Silent letters; Major palatalizations; Affixes; Stress patterns)

Block 15 (Review, employing 2-3 words covered by First- and Second-Year rules)

15,1 2-3 one-syllable words with First-Year rules
15,2 2-3 words with Second-Year rules

Block 16 (Secondary vowels of medium frequency)

16,1 AI10
16,2 OU10
16,3 OE10, OA10
16,4 AW10, AU10
16,5 OI10, OY10
16,6 UE10, UI10, EW10

Block 17 (Suffixed and compound three-syllable words; Suffixes)

17,1 Three-syllable compounds
17,2 Two-syllable words with suffixes: -er, -en, -ing, -y, -s, -ed
17,3 Three-syllable words with suffixes: -er, -en, -ing, -ed, -ly

Block 18 (Primary-vowel and single-consonant rules of medium frequency)

18,1 E13, O13, A13, I13, U13
18,2 S20, S21
18,3 A22
18,4 O25

Block 19 (Silent letters)

19,1 Three-syllable words with suffixes: -ment, -or, -ive -ness, -ance, -ant
19,2 IE11, I24 + GH10, GH10, H20
19,3 K20, G20, W20
19,4 B20
19,5 L20, T20
19,6 U20

Block 20 (Consonant digraphs; Double Consonants)

20,1 Three-syllable words with suffixes: -y, -ful, -al, -able, -eth, -less, -ist, -ish
20,2 PH10, CH31
20,3 TH12
20,4 CC11

Block 21 (Palatalizations)

21,1 Three-syllable words with prefixes: un-, re-, dis-, in-, mis-
21,2 -tion
21,3 -sion
21,4 -ture

Block 22 (Non-affixed three-syllable words)

22,1 Stress pattern 3B
22,2 Stress pattern 3A
22,3 Stress pattern 3C
22,4 Stress pattern 3C

Fourth Year

(Low-frequency primary and secondary vowels; Four-syllable words; Affixes; Four-syllable stress patterns)

Block 23 (Specific primary vowel rules)

23,1 A29, A24
23,2 I35, I25
23,3 Y11, Y13, Y15, Y16

Block 24 (Four-syllable words; Rules for exceptions to general primary vowel Rule 13)

24,1 Four-syllable compounds
Four-syllable words with suffixes: -ing, -y, -er, -or, -ed, -ly
24,2 E38, I38, A38, O38
24,3 A29, I28, Y28, O28, E28
24,4 General primary vowel Rule 27

Block 25 (Remaining general primary vowel rules)

25,1 Four-syllable words with -tion
25,2 I26, Y26, U26, E26, O26, A26
25,3 I26, Y36
25,4 A12, I12, Y12, O12, U12
25,5 E14, I14, Y14, A14, O14, U14

Block 26 (Low-frequency secondary vowel rules)

26,1 Four-syllable words with suffixes: -able, -ment, -al, -ness -ary, -ist
26,2 IE17, EY17
26,3 AI17
26,4 EA33
26,5 IE12, EI10
26,6 EY10, EI20
26,7 -ous, OU31, OU35, OU33, OU34
26,8 UI31

Block 27 (Four-syllable words; General primary vowel Rule 32)

27,1 Four-syllable words with prefixes: un-, in-, dis-, mis-
27,2 Stress pattern 4A and 4B
27,3 Stress pattern 4C
27,4 Stress pattern 4D
27,5 Other four-syllable words (miscellaneous stress patterns)
27,6 E32, O32, A32, I32

APPENDIX D

SPELLING-TO-SOUND CORRESPONDENCES: RULE DESCRIPTION, EXAMPLES, POSITION IN SEQUENCE

Spelling-to-Sound Correspondences for Primary Vowels

Grapheme Unit	Rule #[1]	Rule Description	Examples	Position in sequence
A	11	a → [e] /__Ce#	name, brave	6,1
	12	a → [e] /__C{r, l}e#	acre, stable	25,4
	13	a → [e] /__CV	baby, nature	18,1
	14	a → [e] /__CrV	April, fragrant	25,5
	15	a → [æ] /__C(C)#	sat, fast	1,1
	16	a → [æ] /__CC....	saddle, jacket	8,2
	17	a → [ə], [ɪ] in unstressed syllables	above, final	10,1
	21	a → [a] /__{rC, r#}	cart, car	9,1
	22	a → [ɛ], [æ] /__r	vary, marry	18,3
	23	a → [ɔ] /__{ll, lk, lt, ld} #	ball, walk salt, bald	13,2
	24	a → [ə], [ɔ] / {w, u}__	wad, squat	23,1
	25	a → [o] / {wh, w, qu} __r	wharf, war, quart	9,3
	26* [2]	a → [e] /__-V	mosaic	25,2

[1] For further description of these rules and of the rule notation, see Berdiansky, Cronnell and Koehler (1969), Cronnell (1971a), and Section II of this report.

[2] Asterisked rules do not appear in earlier reports.

Grapheme Unit	Rule #	Rule Description	Examples	Position in sequence
A	27*	a → [æ] /__City	humanity, capacity	24,4
	28*	a → [æ] /__C $\begin{Bmatrix} ic \\ id \\ ish \\ it \end{Bmatrix}$	magic, rapid radish, habit	24,3
	29	a → [e] /__$\{^{nge}_{ste\#}\}$	strange, paste	23,1
	32	a → ∅	separate	27,6
	38	a → [æ] /__ $\{^{vV}_{x(1)V}\}$	cavern, axis axle	24,2
E	11	e → [i] /__Ce#	scene, here	6,2
	13	e → [i] /__CV	hero, meter	18,1
	14	e → [i] /__C$\{^{r}_{l}\}$V	zebra, declare	25,5
	15	e → [ɛ] /__C(C)#	set, felt	1,4
	16	e → [ɛ] /__CC....	edge, extra	8,2
	17	e → [ə], [ɪ] in unstressed syllables	hidden, talent, magnet	10,1
	18	e → ∅/__#	name, edge, immense, mice	6,1
	19	e → ∅/__$\{^{d}_{s}\}$	armed, wives	---[3]
	21	e → [ə] /__$\{^{rC}_{r\#}\}$	herd, father	9,1
	25	e → [i] /#(C)C__#	we, she	3,1
	26	e → [i] /__-V	create, meow	25,2
	27*	e → [ɛ] /__City	prosperity	24,4
	28*	e → [ɛ] /__C $\begin{Bmatrix} ic \\ id \\ ish \\ it \end{Bmatrix}$	relic, cherish credit	24,3

[3]Not taught explicitly as a correspondence rule.

Grapheme Unit	Rule #	Rule Description	Examples	Position in sequence
E	32	e → ∅	difference, several	27,6
	38	e → [ɛ] / __ $\{^{vV}_{x(1)V}\}$	clever, exit	25,2
I	11	i → [ay] / __Ce#	fine, like	6,1
	12	i → [ay] / __Cle#	title, idle	25,4
	13	i → [ay] / __CV	pilot, cider	18,1
	14	i → [ay] / __C$\{^{r}_{l}\}$V	migrate, idly	25,5
	15	i → [ɪ] / __C(C)#	sit, milk	1,1
	16	i → [ɪ] / __CC....	hidden, little	8,2
	17	i → [ə], [ɪ] in unstressed syllables	missile, office	10,1
	21	i → [ə] / __$\{^{rC}_{r\#}\}$	bird, sir	9,1
	22	i → [ay] / __$\begin{Bmatrix} nd \\ ld \\ gn \end{Bmatrix}$#	find, wild sign	13,3
	24	i → [ay] / __gh	high, right	19,2
	25	i → [y] /C__VC	million, onion	23,2
	26	i → [ay] / __-V	liar, diet	25,2
	27*	i → [ɪ] / __City	humidity, captivity	24,4
	28*	i → [ɪ] / __C$\begin{Bmatrix} ic \\ id \\ ish \\ it \end{Bmatrix}$	clinic, timid, finish, limit	24,3
	32	i → ∅	aspirin	27,6
	35*	i → [i]	police, ski	23,2
	36*	i → [i] / __-V	radio, period	25,3
	38	i → [ɪ] / __$\{^{vV}_{x(1)V}\}$	civic, river	24,2

Grapheme Unit	Rule #	Rule Description	Examples	Position in sequence
O	11	o → [o] /__Ce#	home, smoke	6,2
	12	o → [o] /__C{r, l}e#	ogre, noble	25,4
	13	o → [o] /__CV	notice, odor	18,1
	14	o → [o] /__C{r, l}V	okra, only	25,5
	15	o → [a] /__C(C)#	lot, lock	1,6
	16	o → [a] /__CC....	motto, hockey	8,2
	17	o → [ə], [ɪ] in unstressed syllables	cotton, sailor	10,1
	21	o → [o], [ɔ], [a] /__r	horn, tortoise	9,1
	22	o → [ə] /w__rC	word, worth	9,3
	23	o → [o] /__lC#	roll, gold, yolk, bolt	13,2
	24	o → [ɔ], [a] /__{fC, ng, ss, st, th, g#}	off, soften, song, moss, lost, moth, dog	13,3
	25	o → [o] /__#	go, motto	18,4
	26	o → [o] /__-V	poem	25,2
	28*	o → [a] /__C{ic, id, ish, it}	phonics, solid, abolish, profit	24,3
	31	o → [ə]	won, mother, some, love	13,1
	32	o → Ø	sophomore, licorice	27,6
	38	o → [a] /__{v, x}V	novel, oxen	24,2
U	11	u → [(y)u] /__Ce#	use, crude	6,2
	12	u → [(y)u] /__Cle#	bugle	25,4

Grapheme Unit	Rule #	Rule Description	Examples	Position in sequence
U	13	u → [(y)u] /__CV	unit, crusade	18,1
	14	u → [(y)u] /__C{r l}V	bugler, lubricate	25,5
	15	u → [ə] /__C(C)#	gum, fuss	1,6
	16	u → [ə] /__CC....	sudden, justice	8,2
	17	u → [ə], [ɪ] in unstressed syllables	lettuce, minute	10,1
	20	u → ø / #g__V	guest, guard	19,6
	21*	u → [ə] /__r	fur, burn	9,1
	26	u → [(y)u]/__-V	fluid, ruin	25,6
	31	u → [u]	bull, push put	13,1
	32	u → ø	natural	27,6
Y	11	y → [ay] /__Ce#	rhyme, type	23,3
	12	y → [ay] /__Cle#	cycle	25,4
	13	y → [ay] /__CV	tyrant, papyrus	23,3
	14	y → [ay] /__C{r l}V	hydrant, cyclone	25,5
	15	y → [ɪ] /__C(C)#	myth, gym	23,3
	16	y → [ɪ] /__CC...	system, gypsy	23,3
	17	y → [i], [ɪ] /__# in unstressed syllables	baby, candy	10,2
	19	y → [ay] /__# in stressed syllables	deny, try	3,2
	26*	y → [ay] /__-V	hyena	25,2
	28*	y → [ɪ] /__Cic	physic	24,3
	36*	y → [i] /__-V	Tokyo	25,3

Spelling-to-Sound Correspondences for Secondary Vowels

Grapheme	Rule #	Rule Description	Examples	Position in sequence
AI	10	ai → [e]	stain, rain	16,1
	17	ai → [ə], [ɪ] in unstressed syllables	captain, villain	26,3
AU	10	au → [ɔ]	cause, author	16,4
AW	10	aw → [ɔ]	saw, hawk	16,4
AY	10	ay → [e]	day, play	12,1
EA	11	ea → [i]	each, heat	12,2
	31	ea → [ɛ]	bread, deaf, heaven	12,2
	33	ea → [ə] /__r	earn, search	26,4
EE	10	ee → [i]	beet, feel	3,1
EI	10	ei → [i]	receive, ceiling	26,5
	20	ei → [e] /__{gn, n, gh}	reign, rein neighbor	26,6
EW	10	ew → [(y)u]	few, new	16,6
EY	10	ey → [e]	they, obey	26,6
	17	ey → [i] in unstressed syllables	donkey, money	26,2
IE	11	ie → [ay] /__#	die, lie	19,2
	12	ie → [i] /__....	field, grief	26,5
	17	ie → [i] /__# in unstressed syllables	collie, movie	26,2
OA	10	oa → [o]	load, boat	16,3
OE	10	oe → [o] /__#	hoe, toe	16,3

Grapheme Unit	Rule #	Rule Description	Examples	Position in sequence
OI	10	oi → [oy]	noise, join	16,5
OO	11	oo → [u]	broom, tool	12,3
	12	oo → [ʊ]	book, wood	12,3
OU	10	ou → [aw]	count, mountain	16,2
	31	ou → [ə]	couple, young	26,7
	33	ou → [(y)u]	through, group	26,7
	34	ou → [ɔ]	fought, thought	26,7
	35	ou → [o]	soul, though	26,7
OW	11	ow → [o]	glow, below, own, bow	12,4
	12	ow → [aw]	now, allow, owl, bow	12,4
OY	10	oy → [oy]	boy, toy	16,5
UE	10	ue → [(y)u]	blue, argue	16,6
UI	10	ui → [(y)u]	fruit, juice	16,6
	31	ui → [ɪ]	build, biscuit	26,8
		Spelling-to-Sound Correspondences for Consonants		
B	10	b → [b]	boy, cub, number	1,5
	20	b → ∅ /m__#	climb, comb	19,4
BB	10	bb → [b]	bubble, blubber	1,5 (9,2)[4]
C	11	c → [s] /__{e, i, y}	cent, lace, city, fancy	7,1
	12	c → [k] /__{a, o, u, C, #}	cat, come, cut cream, picnic, scare	4,2

[4] The unit in parentheses after some double consonant rules indicates the first actual occurrence; see Section II.

Grapheme Unit	Rule #	Rule Description	Examples	Position in sequence
CC	11*	cc → [ks] / __ e	accent, succeed	20,4
	12	cc → [k] / __ {a, o, u}	yucca, account, accuse	11,5
CH	10	ch → [č]	cheap, church	11,2
	31	ch → [k]	ache, school, chord	20,2
CK	10	ck → [k]	kick, pack	4,2
D	10	d → [d]	dead, needle	1,4
DD	10	dd → [d]	hidden, sudden	1,4
F	10	f → [f]	fat, after	4,1
FF	10	ff → [f]	off, taffy	4,1
G	11	g → [j] / __ {e, i, y}	gem, age, gin, gypsy	7,1
	12	g → [g] / __ {a, o, u, C, #}	gave, go, gum, green, bag	4,3
	20*	g → ø / {# __ n, __ n#}	gnaw, sign	19,3
	31	g → [g]	get, girl	11,6
GG	10	gg → [g]	egg, wiggle	11,5
GH	10	gh → ø	though, taught, high	19,2
H	10	h → [h]	home, ahead	1,6
	20	h → ø	rajah, hour	19,2
J	10	j → [j]	joy, judge	4,4
K	10	k → [k]	milk, kill	4,1

Grapheme Unit	Rule #	Rule Description	Examples	Position in sequence
K	20	k → ∅ /#__n	know, knot	19,3
L	10	l → [l]	like, mile	1,3
	20	l → ∅ / {o__k, a__f, a__k, a__m, a__v}	yolk, folk, half, calf, walk, stalk, palm, calm, calves, salve	19,5
LE	22	le → [əl] /C__#	little, stable	10,2
LL	10	ll → [l]	bullet, fill	1,3
M	10	m → [m]	man, came	1,5
MM	10	mm → [m]	summer, mammal	1,5 (9,2)
N	10	n → [n]	no, nine, fun	1,1
	20	n → [ŋ] /__{k, x, qu, g pronounced [g], c pronounced [k]}	thank, sink anxious banquet single, finger Lincoln	4,1 (23,3) (11,4) (10,2) (4,5)
NG	10	ng → [ŋ] /__#	ring, song	5,5
NN	10	nn → [n]	inner, funny	1,1
P	10	p → [p]	people, pop	1,2
PH	10	ph → [f]	phone, photo	20,2
PP	10	pp → [p]	pepper, apple	1,2 (9,2)
QU	10	qu → [kw]	quick, banquet	11,4
R	10	r → [r]	run, far	1,6
RR	10	rr → [r]	hurry, marriage	1,6 (9,1)
S	10	s → [s]	sun, fast, horse	1,3
	20	s → [z] /V__V	nose, easy	18,2

Grapheme Unit	Rule #	Rule Description	Examples	Position in sequence
S	21	s → [s] / $\left\{\begin{matrix}ou\\oo\\ea\\a\end{matrix}\right\}$ __e	house, moose, lease, case	18,2
	31	s → [z] / __#	trousers, wives, riches	---[5]
SH	10	sh → [š]	shoe, rush	2,1
SS	10	ss → [s]	mess, missle	1,3
T	10	t → [t]	title, let	2,1
	20	t → ∅ / $\left\{\begin{matrix}s__le\#\\s__en\#\\f__en\end{matrix}\right\}$	wrestle, fasten, often	19,5
TCH	10	tch → [č]	match, notch	11,2
TH	11	th → [θ]	thin, bath	2,2
	12	th → [ð] / __$\left\{\begin{matrix}e\\er\\ern\end{matrix}\right\}$ #	bathe, father, northern	20,3
	13	th → [ð] in pronouns, conjunctions, and other function words	they, although, the	2,2
TT	10	tt → [t]	little, mitt	1,1 (1,5)
V	10	v → [v]	vase, love	4,5
W	10	w → [w]	wet, beware	4,1
	20	w → ∅ /#__r	wren, wrong	19,3
WH	10	wh → [hw] or [w]	when, whether	11,3
X	10	x → [ks]	box, oxen	4,4
Y	10	y → [y]	yet, beyond	4,4
Z	10	z → [z]	zoo, lazy	4,5
ZZ	10	zz → [z]	buzz, fuzzy	4,5

[5]Not explicitly taught as a correspondence rule.

APPENDIX E

NUMBER OF WORDS SEQUENCED FOR READING INSTRUCTION

Year	Basic word list (Section IV)	Irregularly-spelled words (Section V)	Proper names (Section VI)	Irregularly-spelled proper names (Section VI)	Total
1	797	38	65	---	900
2	2313	111	159	---	2583
3	3253	634	95	37	4019
4	1148	393	103	28	1672
Total	7512	1176	422	65	9174
Additional unsequenced material (Section VII)					253
Grand total					9427

Total number of names: 487

Total number of other words: 8940

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